

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

JANUARY, 1943

No. 1

STORY OF INDIAN LIFE BEFORE COLUMBUS TOLD IN "STREAMLINED" EXHIBITS

By PAUL S. MARTIN

CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

With the opening of the west section of Hall B, a section called "Indian America," an era of radically improved technique in anthropological exhibits has been inaugurated. Here the visitor will find to his delight that few specimens, practically no labels, good lighting, and a liberal use of gay colors

this antiquated notion of museum exhibits, shows conclusively that the ordinary visitor will give no more than a hasty and bored glance at these "systematic" exhibits. For the most part they tell no story, have no meaning, are dull, forbidding, and fatiguing, and have been responsible for the common saying, "Dead as a museum." The most that may kindly be said about older syste-

hensive though necessarily synoptic fashion. The purpose of this entire hall will be to give the visitor a bird's-eye view of the ancient cultures and civilizations of the Americas. The accomplishments of the peoples of each large geographical area will be shown in relation to those of other areas. It is proposed to emphasize modes of life rather than specific traits and developments.

POTTERY

TYPICAL FORMS OF DIFFERENT REGIONS



EXAMPLE OF EXHIBITS IN NEW HALL OF AMERICAN ARCHAEOLOGY

Typical forms of pottery characterizing Indian cultures in various areas of North and South America at the time of discovery by Columbus.

harmoniously and tastefully blended, make for irresistible displays. All previous ideas and methods of displaying materials have been thrown overboard. Formerly, it was our wont to exhibit specimens—many baskets, hundreds of stone tools, rows of pots—with no attempt to give meaning to these objects. Just as a series of nonsense syllables do not make a poem or the words in a dictionary do not constitute a story, so did these exhibits make no sense to anyone. There are many museum curators who still cling to the notion that a drab case, full of spears or butterflies or rocks, is so tantalizingly attractive that the casual visitor will be compelled to look at the exhibit. Experience has proved that such exhibitions do not teach anything.

The scientific method, which includes among other things observation as well as the recognition of realities, when applied to

matic exhibits is that they are really study collections stored in the public halls and useful only to a handful of specialists.

The Department of Anthropology has rejected these outworn principles and started to work out new methods of display which will teach the function and meaning of objects. The first practical application of these methods has been tried out in this hall which is to be devoted to Archaeology of the New World. The first section of the hall will be opened in January, 1943.

SYNOPSIS OF EARLY AMERICAN CULTURES

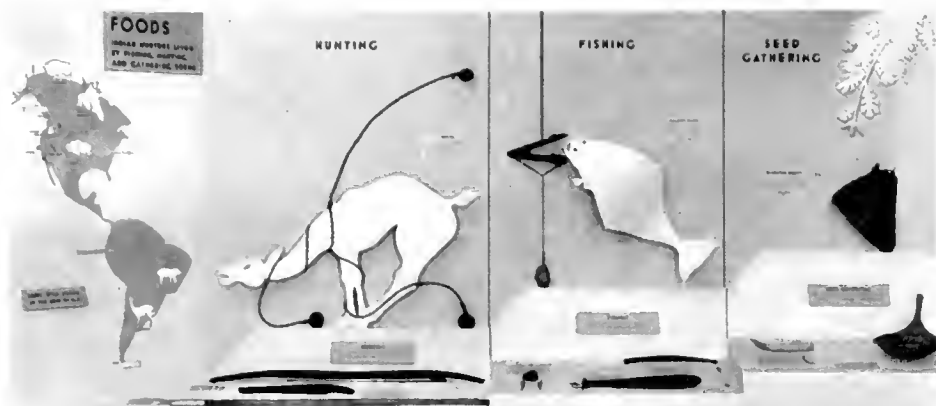
To set forth the archaeology of North, Central and South America in one hall may seem like a bold, almost impertinent, and impossible feat. Yet we are confident that it can be done. Of course, we shall attempt to present only the most essential facts concerning the history of the Indian civilizations, but this will be done in a compre-

The exhibits in the hall are designed to give in an integrated fashion a basic knowledge of New World archaeology to any interested visitor. From this hall (B) the visitor can then go to the other Indian exhibits in the Museum with a framework of knowledge, understanding, and depth of perception which will give him greater insight and pleasure. It is the avowed purpose to increase the knowledge, happiness and experience of every visitor by stimulating thought and feeling.

There will be three sections in this new hall, when it is completed:

1) "Indian America," the New World civilizations as the White man found them. This section is now completed and will be opened on January 25, 1943.

2) The New World civilizations as they were in the thousands of years preceding Columbus. This section will exhibit the



BASIC FOOD COLLECTING ECONOMIES OF THE NEW WORLD ILLUSTRATED

This exhibit in the new Hall of American Archaeology demonstrates three of the Indians' principal methods of obtaining food—hunting, fishing, and gathering seeds. Map on left shows distribution of staples such as game, nuts, acorns, etc., thus relating food habits of various tribes to their environment. Agriculture is the subject of a separate exhibit.

main accomplishments of the Peruvians, Mayas, Aztecs, and Pueblos, as well as those of the Indians of the Mississippi Valley and the rest of North America. It will also show the chronological order and the sequence of these civilizations from approximately the year 1492 back to the earliest evidence of man in the New World—or about 15,000 to 25,000 years ago. The task of presenting these subjects will be carried out by means of dioramas and a limited number of specimens tastefully arranged to illustrate use.

3) Techniques: how stone, bone and metal tools, pottery, baskets, and clothing were made and used; how archaeologists find, excavate, and date ancient ruins; and finally, how archaeologists collect and interpret information such as is assembled in Section 2.

The section about to be thrown open to the public is Section 1, that which is concerned with New World civilizations as they were found by European explorers, missionaries, and conquerors.

In later numbers of *FIELD MUSEUM NEWS* it may be possible to describe various separate exhibits. At present it seems desirable to give a brief summary only of what Section 1 contains. In this section are shown some of the fundamental characteristics of New World civilizations and cultures as they were at the time when the White man came: that is, at the point where recorded history and archaeology (unwritten history) meet. It is axiomatic that to exist, every man must eat, clothe himself, erect some form of shelter, and make and use tools—even though all of these homely and fundamental tasks be performed either on a relatively simple plane or in a complex way. These aspects of Indian life are exhibited in this section, not with reference to one isolated area, but with reference to the entire New World. Such fundamentals can best be considered in this way.

The exhibits deal with a series of important culture traits arranged to show their forms and their spatial distribution

over North, Central, and South America. Specifically we take up the following subjects: (1) Where we obtain some of our knowledge concerning the customs of the Indians; (2) architecture (houses and temples); (3) travel and transport; (4) clothing; (5) decorative art; (6) economy—that is, agriculture, tobacco, hunting and fishing, seed and root gathering; (7) distribution of types of basketry, pottery, weaving and textiles, and metal work; (8) a chart showing why some Indian civilizations are rated higher than others; and (9) writing.

These newly opened exhibits are really an example of the way archaeological knowledge is built up. Suppose that nothing is known of New World archaeology, and that we are desirous of obtaining the history of the pre-white populations that lived here. If our investigation is to produce valid results, we must plan it carefully. The procedure which has proved most useful is that of working from the historically recorded known back into the past. The starting point for investigation is where recorded history—as left by conquerors, explorers, and missionaries—and the unknown (pre-history) meet. This is the point whence archaeologists begin their backward research.

In the new section, "Indian America," the exhibits present the accomplishments of the Indians at or about the year 1492 and illustrate, therefore, the point where recorded history meets unrecorded pre-history. The visitor is shown the final and some of the greatest advances made by the Indians before the coming of the Whites. From this scene, one will (when the next section is ready) journey backward into prehistoric times and will obtain glimpses of what was happening in various New World areas, at say, A.D. 1200, 1100, 1000, 900, 800, and finally 20,000 B.C.

This then, is the starting point for understanding all that will follow. And although it represents the end point of the aboriginal Indian civilizations, it is the starting point for investigation of the past.

The genesis of this new Hall of American Archaeology occurred about ten years ago. At that time there was a Hall of North American Archaeology located on the main floor of the Museum. In order to make room for a new exhibition, "The Races of Mankind," the North American archaeological specimens were moved down to Hall B on the ground floor. My former chief, the late Dr. Berthold Laufer, and I were profoundly dissatisfied with the way these archaeological materials were displayed. We felt that the exhibits were dull and lacking in force. The specimens as arranged had no meaning. We discussed the possibility of converting this hall into one which would deal, in a general way, with all New World Indian civilizations. It seemed important to show that the Indians over many centuries had evolved many techniques, such as weaving and stone working; many inventions and discoveries, such as agriculture, writing, metal working, and pottery making. We desired to show that the growth of civilizations was a long, slow process and depended on many factors. We hoped to demonstrate that many items, the most important of which was agriculture, had profoundly affected the course of our own civilization. We wanted to give the visitor who comes to the Museum a real feeling for the accomplishments of the Indians from whom we have borrowed so much. And we felt this could all be done in one hall so that the visitor would not have to walk through seven Indian halls and then come away footsore, weary, bored, and confused.

But, for various reasons, nothing came of our many discussions and plans at that time. But the seeds were sown; and everyone felt that we were due, sooner or later, to make some revolutionary changes in exhibition methods.

In 1940, Dr. John Rinaldo, Research Associate on the staff, suggested that one case of archaeological materials from the writer's excavations in Colorado could be more interestingly displayed. In order to employ the element of surprise and to avoid premature discussion, the case was quietly reinstalled in accordance with Dr. Rinaldo's suggestions. Miss Anne Harding (now Mrs. Alexander Spoehr), who was then a volunteer artist on the staff, made four water colors to illustrate our ideas. Cut-out letters were used in this case for the first time in Field Museum. It met with instant approval, and plans for a whole hall in the same style were immediately forthcoming, including the employment of the several top flight assistants necessary for the project.

Soon afterward, with the assistance of Dr. Alexander Spoehr, Assistant Curator of North American Ethnology, and Miss Margaret Ross, Volunteer Artist, plans for a Hall of New World Archaeology were drawn up, submitted to Director Clifford C. Gregg and President Stanley Field, and were approved by them. Early in 1941

Mrs. Spoehr joined the permanent staff. She and Dr. Spoehr gave these preliminary plans additional character and punch by their original ideas and dynamic conceptions. Dr. Spoehr, until he entered the United States Armed Forces last February, mapped out the details for many of the cases in Section 1; and Mrs. Spoehr has done the art work in all the cases of this section. She has been given some assistance in this by Miss Dixie Davis.

After Dr. Spoehr left, the Museum obtained the brilliant aid of two newly added members of the staff, Mr. Donald Collier, Assistant Curator of South American Archaeology and Ethnology, and Mr. George Quimby, Assistant Curator of North American Archaeology. Through their efforts the work of executing the various cases in Section 1—"Indian America"—has come to fruition. Both Messrs. Collier and Quimby were immediately fired with enthusiasm for this project and have made innumerable distinguished contributions and improvements to the plans, the installations, and the labels. There has been an uninterrupted flow of original contributions from these two archaeologists.

Also added to the staff in 1941 was Artist Alfred Lee Rowell who was known for his superior work in creating scale model dioramas. Mr. Rowell has finished one reconstruction diorama of a famous ruin—the Mummy Cave in Canyon del Muerto, Arizona—as it probably appeared about A.D. 1250. Although this model really belongs in Section 2, it has been temporarily placed on display in Section 1 so that everyone may enjoy it without delay.

Thus, a dream of what museum exhibits should be has been made into reality. These exhibits are possible only because everyone has worked in concert on a co-operative procedure. The plans and details of each case are thrashed out in conferences and a majority must agree on all points. Then a temporary installation with labels is set up and shown to members of other departments for criticisms and for suggested improvements. After that, we proceed with the final installation. It may take as long as four to six weeks to do a single case.

BUSSES STILL RUN TO MUSEUM FOR SUNDAY VISITORS

Sunday bus service into Grant Park for visitors to Field Museum, the Adler Planetarium, and the Shedd Aquarium, recently canceled under the tire conservation program, was almost immediately restored by the Chicago Motor Coach Company.

A special bus, labeled "Planetarium," now leaves Michigan Avenue and Seventh Street at 20-minute intervals on Sundays, the first run starting at 12:19 P.M. From that time until 6 P.M. service continues, with stops at each of the three lake front institutions. Motor coach passengers from any part of

the city may transfer to and from this special Grant Park bus. The service differs from that on weekdays, when the No. 26—Jackson Boulevard bus line operates to the Grant Park institutions.

"Officials of the motor coach company and the Office of Defense Transportation are to be commended for recognizing the educational value of these institutions, and continuing thus to make them accessible to the thousands of Chicagoans who have no time other than Sundays to visit them," said Acting Director Orr Goodson in acknowledging the restoration of service.

Sunday services of the Chicago Surface Lines, Chicago Rapid Transit Company, North Shore Line, South Shore Line, and Illinois Central Railroad to points within easy access of the Grant Park institutions are continuing as in the past.

GAS RATIONING REDUCES SERVICE OF MUSEUM TO SCHOOLS

The Office of Defense Transportation has certified the operation of the two N. W. Harris Public School Extension trucks for a reduced mileage as compared to previous years. The trucks are used for the delivery of portable Museum exhibits to schools in Chicago.

In order to comply with this regulation, beginning January 4, 1943, the trucks will call at each school to exchange cases every thirteenth school day, instead of every tenth school day as has been the custom. The reduced number of calls will permit the delivery of not more than twenty-four school cases during the school year, as compared with thirty-four cases which each school has received previously. —J.R.M.

Polish Officials Visit Museum

Field Museum was host on December 1 to a group of distinguished officials of the government of Poland. The visitors included Dr. Henri Strasburger, Minister of Finance whose headquarters at present are in London, England; Dr. Karol Ripa, Consul-General in Chicago; Dr. Stanislaus Kirkor, Director of the Polish Department of Finance's office in New York, and Dr. Josef P. Junosza, Director of the Polish Information Center in Chicago. Mr. Orr Goodson, Acting Director of the Museum, conducted the party on a tour of some of the outstanding exhibits, including the habitat group of storks for which specimens were contributed to the Museum before the war by the Polish-American Chamber of Commerce in Warsaw.

"Believe it or not"—Andranomanjakakel-hibe is the name of a place in Madagascar from which a gem in the Museum's collections was collected by a Museum expedition. A member of the expedition says that there are in Madagascar places with even longer names. Of course, Wales can do still better.

DIRECTOR CLIFFORD C. GREGG IS NOW A COLONEL

The following news release from Camp Hood, Texas, reached FIELD MUSEUM NEWS just at press time:

"According to a report just received from General Bruce's headquarters, at the Tank Destroyer Center,

Lieutenant Colonel Clifford C. Gregg, Assistant Chief of Staff, G-1 (Personnel), has been promoted to the rank of full Colonel. [Colonel Gregg is the Director of Field Museum, on leave of absence to fulfill his duties as an officer in the



COL. C. C. GREGG

Army.] Colonel Gregg, as one of the four G's on the General's staff, is adviser on all matters of policy relative to personnel planning, both commissioned and enlisted, of the Tank Destroyer Center. This is saying in a military way that he is a sort of god-father to everyone in Camp Hood. He is also interested in all matters, affecting the welfare of the Command. In short, a mammoth task. The amount of midnight oil burned in Colonel Gregg's office would light all of the lamps of China.

"Colonel Gregg began his military career as a Second Lieutenant of Infantry in 1917. He served through World War I, was honorably discharged, and accepted a commission as a Lieutenant in the Reserves. Promoted to Major, he entered active duty in 1940 in the 6th Corps Area Recruiting Office in Chicago. After his transfer to the Adjutant General's Department, he was promoted to Lieutenant Colonel in March, 1942, attended the Adjutant General's School, Fort Washington, Maryland, and reported for duty with the Tank Destroyer Center in Temple, July 8, of this year."

The Late Walter P. Murphy Was a Museum Contributor

Because of his modest insistence that many of his philanthropies be anonymous, it was not generally known that the late Walter P. Murphy, founder of the important Northwestern University Technological Institute, who died December 16, was a generous donor of material to the collections of Field Museum. In recognition of his gifts he was elected by the Board of Trustees to the membership classification designated as Contributors, in the group whose gifts reach a value of \$25,000 to \$50,000.

Whatever the time of year, a breath of spring may be enjoyed by visiting the diorama illustrating the vernal flora of an Illinois woodland, in Martin A. and Carrie Ryerson Hall (Hall 29, Plant Life).

GUAYULE RUBBER

Progress of Emergency Production at Salinas (Calif.) Plantation

BY J. FRANCIS MACBRIDE
ASSOCIATE CURATOR OF HERBARIUM

Probably no single plant has in recent years so captured the interest and imagination of the general public as guayule. It has become the most talked about and written about emergency source of natural rubber. When Congress last spring authorized the Department of Agriculture to engage in its propagation, the task was turned over to the Forest Service, and the chance to prove the worth of guayule as a rubber plant was at hand.

That no effort is being spared to make this opportunity conclusive must be evident to anyone who visits the fields where the plant is now being grown near Salinas, California, and hears from the several capable men in charge the explanation of the many phases of the work. It was my good fortune recently to be able to spend a day on the Guayule Emergency Rubber Project. Members of the plantation staff gave me data on the progress to date, some of which I am permitted to make public.

With an assistant I saw many of the fields and experimental plots in the Salinas Valley. It was my pleasure to have with us Dr. W. B. McCallum, who may be called the dean of the guayule business, having been in charge of the development and growing of it for a private company since about 1912. This company grew some 8,000 acres of the shrub under cultivation and processed it at Salinas alone, and since the Government has taken over their interests in the United States, Dr. McCallum has continued to give his practical knowledge.

Nowadays the science of botany has so progressed that the domestication, so to speak, of a plant like guayule can proceed definitely and simultaneously along all the lines desired so that the development of its maximum usefulness may be guaranteed. This, however, calls for a staff of men trained in everything that has to do with the living plant—the varieties and their improvements, the foods they need, and the diseases that injure them. Never was there a finer example than in the guayule setup of the usefulness and interdependence of every phase of botanical science, including taxonomy, with practical agriculture. Among those who materially assisted the writer of this article is Dr. E. L. Perry, of the Salinas Project staff.

30,000 ACRES TO BE GROWN

A survey of the southwestern United States has been made by scientifically trained men who know the plant and its habitats. This has to date resulted in the selection of a considerable number of areas in California where the Government has already leased 30,000 acres of land upon which guayule will shortly be growing. A great many more

thousands of acres will be acquired as nursery stock is produced to plant them. In addition to these production areas, about 100 small indicator plots have been established in Texas, New Mexico, and Arizona, as a means of testing the adaptability of other areas for guayule culture.

In the United States the shrub grows naturally only in the Big Bend country of southwestern Texas. Its principal development is in north-central Mexico, where it is



"THE PLANT OF THE YEAR"

Guayule (*Parthenium argentatum*), hopefully being cultivated as a source of rubber. Native to northern central Mexico and Big Bend section of Texas. Larger mature plant is about four years old; other is a one-year seedling.

confined to the tops and slopes of limestone ridges and outwash cones. Like most other plants, however, it responds readily to better growing conditions. Up to the present it has been found to grow best under cultivation in the fertile Salinas Valley. Here, under irrigation, it attains about a foot in two years, and its final height of two and one-half feet, in four or five years. The plant produces rubber as the result of alternate periods of growth and dormancy, and on its natural range where it may rain any time during the year and where growing conditions are poor, it ordinarily requires several years for the plant either to develop much size or accumulate much rubber. Botanists therefore have the problem of producing races that, in spite of forcing in good soils and by irrigation, will yield a maximum of rubber. Dr. McCallum has been remarkably successful along this line during his thirty years of selection and breeding work. The strains now grown commercially produce about twice as much rubber per pound of shrub as the wild plants. A great deal of work, is also being done to develop forms suitable for various soil types and resistant to certain growth hazards which are found in various localities.

It is remarkable that there are now available about 300,000,000 seedlings ready for planting in the field this winter, when it is considered that only some 23,000 pounds of seed of improved varieties were on hand at Salinas when the government took over the work. From the growing fields and from the nurseries more than 150,000 pounds of seed were obtained during the past summer. A machine had been developed by the company for gathering seed, but since it is somewhat wasteful and every possible pound of seed is required, the machine method was abandoned and the harvesting is done by hand. The nursery beds, which are four feet wide and four hundred feet long, look at a little distance like gray-green carpets of some low vegetation—for example, some vegetable—so closely are the seeds sown, and so high is the percentage of germination and growth.

When these seedlings are only a few inches high they are transplanted, one by one, by a four-row machine especially devised for the purpose. The plants are spaced from 20 to 24 inches apart in the rows, and the rows themselves are 28 inches apart. This permits clean cultivation by tools between the rows, but a considerable amount of labor is required, as with sugar beets, for weeding between the plants in each row.

TWO-YEAR HARVEST IN EMERGENCY

When the plants are mature they become bushy. They are then about two or two and one-half feet high, and composed of many more or less ligneous branches that are herbaceous only toward the growing tips where the gray-green, rather slender, leaves are closely crowded together. Above the leaves once a year—or by irrigation sometimes more often—the small greenish yellow flowers are raised on a slender stalk. A rather pleasant resinous fragrance, as of many composites, is everywhere present.

Under cultivation the most economical time to harvest guayule is at the end of the fourth or fifth growing season. However, in view of the pressing need for rubber, the Forest Service plans to grow it only two years, spacing the plants more closely in the field in order to compensate for the reduced volume per shrub.

Guayule plantations will always have to have a nursery of seedlings to perpetuate them, for in harvesting the entire plant is used. An efficient method of extracting rubber from guayule has been in use for many years, and briefly it is as follows: The plants, roots and all, are chopped up rather finely and run between rollers to crush the woody portions. This material, with a carefully controlled addition of water, is then fed into a cylinder lined with very hard silicon bricks and partly filled with a special kind of smooth pebbles. The tube rotates and the material is thus ground between the pebbles and the lining, separating the rubber particles from the plant fibers. Emerging from this tube, the mass

goes into a settling tank where the water-logged woody material sinks and the rubber floats to the surface, its particles agglomerated in the form of "worms." These worms are then spread out in pans and dried, after which they are pressed into slabs weighing 100 pounds each.

REGARDED AS PERMANENT SOURCE

The question that is uppermost in the minds of every one is, of course, whether guayule will pay. There is no reasonable question that it will not be an important help in supplementing other sources of rubber because guayule rubber, however expensive, is of high quality and under present conditions will have its special place. This importance lies in its ability to fill those purposes in rubber manufactures for which the synthetics are not well adapted.

One man's guess seems to be as good as another's as to its value as a crop in normal times, but at least one man I talked to in Salinas has complete faith in it, and that man is the one who has known it longest, Dr. McCallum. He points out that had our government protected it and subsidized its cultivation in the 1930's, as some thoughtful and informed men desired, there would be no acute rubber shortage today. Hereafter, Dr. McCallum avers, it will remain permanently a supplementary source, at least, because of its particular merit in conjunction with other rubbers. There are a large number of rubber-bearing plants in the United States, both native and imported, only a few of which, however, have any apparent commercial possibilities. Among the best of these is an African vine, *Cryptostegia*, but so far a thoroughly satisfactory means of collecting the rubber from it has not been devised.

Boys and Girls of the 4-H Clubs Make Annual Museum Visits

In accordance with their custom, established for many years, the cream of America's farm youth—the boys and girls of the Four-H Clubs selected for the annual pilgrimage to Chicago—included Field Museum during their recent visits. The Museum was host to some 450 of the girls on November 30, 384 boys on December 1, and a smaller group which made a special tour on December 5. Each of the two large groups were assembled in the James Simpson Theatre to hear a preliminary lecture by Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation staff. After the lecture they were supplied with pictorial maps indicating the outstanding exhibits which would be likely to interest them, and sent forth on their own in the Museum halls. All members of the Raymond staff were stationed at strategic points to give them information and otherwise assist them. The special group was taken on a conducted tour of the Hall of the Stone Age of the Old World.

THINGS YOU MAY HAVE MISSED

Museum Displays "Noah's Ark"—But It's a Seashell

A recent visitor to the Museum asked to see Noah's Ark. Although he had to be told Noah's Ark was not in the Museum he was shown a fragment of Mt. Ararat upon which the Ark landed, according to the Bible. After he left it was found that although the Museum did not have the Ark, it did have a Noah's ark—that is, a salt water shell which Linnaeus named Noah's Ark (*Arca noae*) because he noted in it a re-

semblance to some crude types of early ships. On several occasions visitors have brought to the Museum alleged relics of the Ark in the shape of pieces of wood which they insisted were parts of the Ark, although naturally they were unable to prove it. Many years ago a woman claimed she knew exactly where Noah's Ark was, and asked the Museum to finance an expedition that she had planned in great detail to excavate it.



Illustration on right courtesy of Lester Bridaham, Art Institute of Chicago

TWO VIEWS OF NOAH'S ARK SHELL, AND ARTIST'S CONCEPTION OF BIBLICAL ARK
(Photographs of shell one-half natural size)

A Huichol Indian Legend About Rock Crystal

The Huichol Indians of Mexico have a legend of the origin of rock crystal fully as weird as the most absurd of the numerous superstitions concerning gems prevalent before and during the Middle Ages. According to a note left by the late Dr. Oliver C. Farrington, former Curator of Geology, these Indians believe that rock crystals are mysterious people, dead or alive, who at the shaman's bidding come flying through the air as tiny white birds which afterwards crystallize. They are called grandfathers and they bring special luck in hunting deer. Some hunters keep as many as ten carefully put away in baskets. The condition necessary for living people to become rock crystal is that they must be true husbands and wives—hence, such crystals are rare, the Indians explain. Deer hunters after death become crystals and accompany the sun on its travels.

BOOKS WITH WAR INTEREST AVAILABLE IN LIBRARY

The Librarian, Mrs. Emily M. Wilcoxson, calls attention to the fact that many books with special interest due to the war are available to Members of the Museum and other readers. The public is invited to use the Library whenever special geographic, economic and scientific information is desired concerning regions involved in the

conflict. Among a few recently added books are the following:

China After Five Years of War. Published by the Chinese Ministry of Information.

Lengyel, *Dakar* (reputed to be the only extensive description of that strategic African locality).

Milinkov, P.: *Outlines of Russian Culture.*

Haynes, W.: *This Chemical Age.*

Blair, T. A.: *Climatology* (general and regional).

Thompson, V.: *Thailand, the New Siam.*

The Library is open to the public on weekdays from 9 A.M. to 4 P.M., except Saturdays, when it closes at 12 noon; it is closed on Sundays. As it is purely a reference library, there are no circulating books, but the reading room has been especially equipped for comfort and convenience, and has the best type of modern lighting.

Demons Feared in Africa

Many Bedouin Arabs of north Africa believe in the existence of demons (*affrits*) who carry out their evil designs under the direction of a chief of the demons. Primitive rock engravings, and even the desert itself are attributed to these demons. Divination and omens are seriously regarded, and the evil eye is greatly feared. Amulets, and sometimes tattooing, are regarded as a protection against an evil glance or curse. An *affrit* is said to have red eyes and long talons.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN
	JOHN P. WILSON

OFFICERS

STANLEY FIELD.....	President
ALBERT A. SPRAGUE.....	First Vice-President
SILAS H. STRAWN.....	Second Vice-President
ALBERT B. DICK.....	Third Vice-President
*CLIFFORD C. GREGG.....	Director and Secretary
ORR GOODSON.....	Acting Director and Acting Secretary
SOLOMON A. SMITH.....	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD.....Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN.....Chief Curator of Anthropology
B. E. DAHLGREN.....Chief Curator of Botany
HENRY W. NICHOLS.....Chief Curator of Geology
KARL P. SCHMIDT.....Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE.....Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

RUSSIAN MUSEUMS

Owing to the success of Russian arms during the past year, the world has been revising its ideas of "the bear that walks like a man." It is plain that the Russia of the last war and that of the present one are vastly different. We hear much of technological advances, of great factories and engineering projects, and of the newly developed capacity of the people to adjust themselves to a mechanical age. At first it was said that the Russians were temperamentally unfitted for such things, and that chaos would result as soon as the highly paid American experts left their factories. To some extent this may have been true in the beginning, but it is now evident that the Russians can do for themselves.

Among the factors which brought about the change it is perhaps not generally known that visual education through the use of museums was an important one. The growth and spread of museums in Russia since the revolution has been phenomenal. Few Americans have been witness to it, and complete information is lacking, but a report from the Soviet Society for Cultural Relations with Foreign Countries published by the *Museums Journal* in 1936 gives numerous facts and takes on a new importance in the light of what has happened since then.

Up to 1917 Russia's museums of all types numbered only 114. By 1934 they had increased to 738. These museums were of all

kinds, including some that were wholly innovations, as the historico-revolutionary museums, the historico-social museums and, most unusual of all, the anti-religious museums. Although some of these were involved in political doctrine, all were fundamentally alike in spreading information through objective methods. Museums of natural science increased from 10 to 39 and art museums from 13 to 60. Most numerous were local or regional study museums of which there were 60 in 1917 and 374 in 1934. These combined natural science and practical economy with especial reference to agricultural methods, and were distributed over wide areas away from the larger urban centers. Thus while museums in Moscow were trebled, those in outlying regions were increased nine times.

Meanwhile, as is well known, scientific research was fostered in the large, long-established institutions of the larger cities, and these served as sources of authority and inspiration to the smaller ones. Close relations with public schools were established, and museums became well recognized as essential parts of the effort to raise the intellectual and cultural level of the whole people. Although we could not admit that they are better individually, there are more museums in Moscow (yes, they also have a planetarium!) than there are in Chicago, and while we know Russia has learned much from us, it is not unlikely that we can learn something from Russia. —W.H.O.

Staff Notes

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, who recently returned from a year of botanical collecting in Guatemala, related his experiences in a radio interview over Station WGN, December 22.

Two more Field Museum men have entered war service. Mr. D. Dwight Davis, Curator of Anatomy and Osteology, has enlisted as a private in the 13th General Hospital, U. S. Army, and has begun training as a surgical technician. Mr. Morris Johnson, a carpenter in the Division of Maintenance, has enlisted in the U. S. Navy as a Carpenter's Mate, 2nd Class.

Two former Museum employees, who had for some time past been retired on pension, died recently. They are A. A. Miller, who served many years as colotyper, and John Hardy, a guard.

Mr. Nicholas Repar, of the Museum's Division of Printing, who has been in the Navy for several months as a Seaman 1st Class, has been promoted to Aviation Machinist's Mate 3rd Class.

Lieutenant Don H. Eldredge, formerly a volunteer assistant in invertebrate paleontology, has been reported missing in an action

in which he served as co-pilot on an American bomber based in England.

Mr. H. B. Harte, Public Relations Counsel, has enrolled in the U. S. Coast Guard Temporary Reserves whose members serve part time on lake and river patrols, and on other duties, relieving regularly enlisted Coast Guardsmen for transfer to service on submarine patrol, convoys, etc.

Honor to Late Louis L. Valentine

The Board of Trustees, at its meeting held December 21, paid tribute to the memory of the late Louis L. Valentine by electing him posthumously to the membership class designated as Contributors to the Museum (those whose gifts range from \$1,000 to \$100,000 in value). Mr. Valentine was the donor of many notable items now exhibited in the Chinese collections.

FIELD MUSEUM HONOR ROLL

Now in the Nation's Service

Army

THEODORE ROOSEVELT,
Trustee—Brig. Gen.
CLIFFORD C. GREGG,
Director—Colonel,
G.S.C.

DR. JOHN RINALDO,
Associate, South-
western Archaeol.
—Staff Sgt.

DR. SHARAT K. ROY, Curator, Geol.—Capt.
D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Pvt.
EMMET R. BLAKE, Asst. Curator, Birds—Corp.
RUPERT L. WENZEL, Asst. Curator, Insects—
1st Lt.
WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.
HENRY HORBACK, Asst., Geol.—Pvt.
JAMES C. MCINTYRE, Guard—2nd Lt.

Navy

LESTER ARMOUR, Trustee—Lt. Commdr.
JOSEPH NASH FIELD, Trustee—Lt. (S.G.)
COLIN CAMPBELL SANBORN, Curator, Mammals—
Lt. (S.G.)
DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer.
Ethnol. and Archaeol.—Ensign
JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur.
Aeronautics)
PATRICK T. MCENERY, Guard—Master-at-Arms
JOHN SYCKOWSKI, Guard—Ch. Commissary Steward.
GEORGE JAHRAUD, Guard—Ch. Water Tender
CLYDE JAMES NASH, Guard—Ch. Gunner's Mate
NICHOLAS REPAR, Printer—
Aviation Machinist's Mate 3C.
MORRIS JOHNSON, Carpenter—
Carpenter's Mate 2C.

Marine Corps

MELVIN A. TRAYLOR, JR. Associate, Birds—2nd Lt.
FRANK BORYCA, Asst. Preparator, Bot.—Pvt.

Coast Guard

M. C. DARNALL, JR., Guard—Seaman 2C.

Other Services

BERT E. GROVE, Guide-Lecturer—American Field
Service (N. Africa)
RUDYERD BOULTON, Curator, Birds—Staff of
Office of Strategic Services
BRYANT MATHER, Asst. Curator, Mineralogy—
Civilian Worker, Corps of Engineers, U.S. Army
JOHN MCGINNIS, Guard—U.S. Merchant Marine
LLEWELYN WILLIAMS, Curator of Economic Botany
—on special service for U. S. Government

GUATEMALA'S BOUNTY OF PLANTS FOR SCIENCE AND COMMERCE

By JULIAN A. STEYERMARK
ASSISTANT CURATOR OF THE HERBARIUM

The fourth botanical expedition sent by Field Museum to Guatemala was led by the writer, who was accompanied by Mr. Albert Vatter, Jr. of Glenview, Illinois, in the capacity of volunteer assistant and photographer. The party left New Orleans on December 3, 1941, and arrived by steamer at Puerto Barrios, Guatemala, December 7. It returned by overland route through Mexico, arriving at Laredo, Texas, on November 9, 1942, thus completing nearly a year of field work, which resulted in the amassing of about 30,000 herbarium specimens of 11,000 numbered collections. In addition, there were brought back several hundred wood specimens and about a thousand photographs.

Mr. Vatter also collected several hundred specimens of animals, including skins of mammals and birds, insects, and preserved material of reptiles, amphibians, fishes, and mollusks. The expedition was highly successful in penetrating regions hitherto not botanized and brought back scores of species not hitherto recorded from Guatemala, or from Central America, among them various species new to science.

THOUSANDS OF MILES AFOOT

Busses or trains carried the expedition's equipment from one large town to another. From this point on the problem was to send the equipment to localities in the mountains where another base station had to be made. This was accomplished either by pack mules (five to ten usually being needed) or by Indian carriers (ten to eighteen men generally being necessary). All collecting was done on foot, and about 4,000 miles of trails were thus covered. In traveling from one place to another in the course of a day, 15 to 25 miles were usually covered. In many places the trails were too rough and slippery for mule-travel, or were too crowded with overhanging branches. This necessitated walking over many rough, rocky, slippery, and muddy trails, which were especially hazardous and disagreeable in the rainy season.

The first weeks were spent in collecting the flora of Cerro San Gil, the highest mountain adjacent to the Atlantic Coast of Guatemala. It was especially important to visit because it had never been explored botanically. Completely uninhabited, this vast mountain covers over two hundred square miles, all in dense virgin rain-forest except for a patch of cloud forest on the craggy summit which was found to be 4,000 feet in altitude.

PALM LEAVES FOR BLANKETS

In the ascent up Cerro San Gil, which required two nights of camping out, I and my one guide carried only a meager amount of food to last during the three days out. In order to lessen weight no blankets were

taken along. To substitute for these, about a hundred leaves of a *Geonoma* palm were cut to use as cover, but even these did not suffice, and, although the sleeping-site was not higher than 2,000 feet, we were uncomfortably cold throughout successive nights. However, the discomforts of the trip were more than made up by the many rare species of plants collected there. In addition to the plants, the rare *tayra*, tropical relative of the skunk, was found, the first from Central America to reach Field Museum.

A month and a half was spent exploring the uppermost portions of the Sierra de Las Minas, a rugged range in the Oriente badly in need of botanical investigation. The moist summits attain 9,000 to 10,000 feet, and are covered by beautiful cloud forests abounding with plants.

From February to the end of March the little-known portion of the northern half of the Department of Alta Verapaz was explored. Some of this territory had been botanized about forty years ago by Tuerckheim, whose collections had formed historically important types which served as the basis for the descriptions of new species. The present expedition collected again most of Tuerckheim's species, chiefly from the vicinity of Cubilguitz. Dense tropical rain-forest covers this area in a rugged limestone topography, and begonias, orchids, palms, ferns, and a great variety of trees and shrubs were found especially prolific here.

The latter part of March and early April were spent in the region of southern Petén north of Cerro Chinajá. This mountain harbors a very rich flora, and is noteworthy in being the last northern bit of elevated land (up to 2,000 feet altitude) before one drops down into the relatively level and low-lying forested plains of Petén. This Cerro Chinajá area also encloses a large virgin savanna to the south (in the Department of Alta Verapaz) harboring many unusual species of savanna plants not known south of central Petén.

BOTANIZING IN A NEW FIELD

No botanical collections had previously been made in the southern part of the Department of Petén which constitutes about one-third the area of Guatemala. It was deemed especially important to procure as large a collection as possible from this region. About a month was spent traveling by *cayuco* (native dug-out canoe) down the Ríos Cancuen and Pasión, and their tributaries. The expedition penetrated as far north on this trip as the village of Sayaxché in central Petén. Many difficult rapids had to be overcome, and thrills were often experienced when the two native paddlers invariably hesitated on the brink of some swift rapid or argued in their native Kekchi Indian dialect, as to whether they should follow to the left, right, or down the center of the stream. Camp was made along shore each night, and a small clearing was cut out for swinging the hammocks and pabellons

(mosquito-netting tents). For hundreds of thousands of square miles this southern Petén country is covered completely by virgin or practically virgin forests of tall trees, including mahogany, Spanish cedar, chicle, fig, inga, and ceiba. However, the number of species of plants found in these massive forests is especially small and disappointing to the botanist. Whereas orchids, bromeliads, ferns, and other epiphytic plants are plentiful in mountain forests of the rain-forest or cloud-forest type, here they are remarkably few.

VOLCANIC "STEAM HEAT" FAILS

The expedition left Petén just at the end of the dry season, and moved to the Pacific coast of Guatemala as the rains commenced, the rainy season lasting in this section usually from May to October. Extensive collections were taken from Volcán de Atitlán, Volcán Tolimán, Volcán Santa Clara, and Volcán San Pedro. The actual summits of each of these volcanoes were explored. A memorable night was passed atop Volcán de Atitlán. Reaching the summit at dusk, the party of six (Mr. Vatter, myself, and four Indian carriers) prepared to brave the cold and stormy night on the very rocky and treeless cone. We selected a place where hot steam was coming through vents of the crater. Here a tarpaulin was fastened to large boulders. The wind and rain continued to blow. With visions of comfort from steam-heat the party tried to settle here for the night, but the hot steam made the blankets not only uncomfortably warm but also very moist.

The last two months of the expedition were devoted to an intensive collection of the flora of the Department of Huehuetenango. About 1,000 miles here were covered on foot over rough mountainous trails. In the western part of this department many notable additions to the Guatemalan flora were obtained, as well as additional stations for desert plants in Guatemala, hitherto known only in the Oriente from the deserts of the Departments of Zacapa, Chiquimula, and Jutiapa. One especially important plant found in the desert of western Huehuetenango was *Haplophyton cimidum* (locally known as *Yerba de cucaracha*), source of a widely-used insecticide in the United States. The vast high plateau of the Sierra de los Cuchumatanes, much of it rising between 10,000 and 11,300 feet in altitude, was also covered on foot. The northern, western, and northeastern slopes of this range also were explored as far as the lower extensions of this range along the Mexican border.

THOUSANDS OF ORCHIDS

In the lower elevations on the western slopes of the Cuchumatanes were found many other similarly unexpected additions to the Central American flora. Two of these are of special note: 1) Virginia creeper or woodbine of the Chicago region (*Parthenocissus quinquefolia*), and 2) *Ceratozamia*

mexicana, the latter belonging to the group of plants known as cycads. Cycads are particularly noteworthy as survivors of a primitive group of plants which reached their climax in Mesozoic times. Previously cycads were represented in Guatemala by the single genus, *Zamia*. One of the greatest botanical thrills I experienced on the expedition was due to finding in a canyon on one of the western slopes of the Cuchumatanes thousands of plants of a rare and beautiful yellow lady-slipper orchid (*Cypripedium irapeanum*) in full flower. This very showy orchid has a flower about twice the size of our own yellow lady slipper (*Cypripedium parviflorum* var. *pubescens*) of the United States. Many other rare orchids were collected on this trip.

Much of the success of the expedition may be attributed to the splendid generosity and co-operation of the local authorities of the Guatemalan government, especially the Director General of Agriculture, Don Mariano Pacheco Herrarte, who at all times lent the expedition valuable assistance.

COFFEE AVAILABLE TO U. S. BY RAIL

Guatemala is rich in opportunities to supply to the United States many plant products needed in the present war. It has a surplus of coffee which could be rapidly shipped to the United States by rail through Mexico, now that the new international bridge over the Rio Suchiate has been opened for commercial traffic. There are plantations of Cinchona bark (which yields quinine), sugar cane, drug plants of many kinds, wild and Brazilian rubber, also spices such as vanilla, cardamom, cinnamon, allspice, nutmeg, black pepper, besides an important supply of timber-, gum-, and fiber-producing plants.

PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN JANUARY

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays, and certain holidays. There will be no tour on Friday, January 1, when the Museum will be closed for the New Year's holiday, and none on Saturday, January 2, although the Museum will be open as usual to visitors on that day.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these follows:

Wednesday, Jan. 6—Forest Products of the World (Miss Marie Pabst).

Friday, Jan. 8—Animals in Winter (Miss Elizabeth Best).

Wednesday, Jan. 13—Unique Uses of Shells (Miss Loraine Lloyd).

Friday, Jan. 15—Plants of Pacific Lands (Miss Marie Pabst).

Wednesday, Jan. 20—High and Low in the Animal Kingdom (Miss Elizabeth Best).

Friday, Jan. 22—South America, Its Products and People (Miss Miriam Wood).

Wednesday, Jan. 27—Plants and Animals Through the Ages (Miss Marie Pabst).

Friday, Jan. 29—Tobacco and Pipes (Miss Loraine Lloyd).

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

No Sunday Lectures in January; Resumption in February

Attention is called to the fact that Mr. Paul G. Dallwig, the Layman Lecturer of Field Museum, will not present his Sunday afternoon lectures during January, because of engagements to speak before audiences in other cities. He will resume his appearances at the Museum on the four Sundays in the following month (February 7, 14, 21 and 28), at 2 P.M., when his subject will be "Digging Up the Caveman's Past." In March he will speak on "Who's Who in the Mounted Zoo," and in April, the last month of his current season, on "The Romance of Diamonds from Mine to Man." Advance reservations must be made for all Sunday lectures, and may be currently made for any date through the present season, by mail or telephone (WABash 9410). Audiences are limited to adults because of the necessary restrictions on size of groups.

A BOOK FOR ARMCHAIR MOUNTAIN CLIMBERS

"If you spend your vacations among hills or mountains, or are interested in rugged scenery, you will find your pleasure in these surroundings enhanced after a perusal of *Mountains*, by Carroll and Mildred Fenton," says Henry W. Nichols, Chief Curator of Geology.

"The book, written in plain English devoid of technicalities, explains in a simple, easily understood manner how the hills and mountains grew, and how the peaks, valleys, cliffs, and other aspects of the scenery were shaped. It calls attention to many interesting features you may have overlooked.

"Not the least interesting part of the book is the description of the plants and animals that live in the mountains. The style is such that the book provides 'easy reading,' and the information it contains will stay with you."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$1.50. Mail orders accepted.

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

Department of Botany:

From Donald Richards, Chicago—42 herbarium specimens and 69 cryptogams; from Hermann C. Benke, Chicago—134 herbarium specimens; from Dr. M. A. Brannon, Gainesville, Fla.—17 specimens of algae, Florida; from Dr. Walter Kiener, Lincoln, Nebr.—21 specimens of algae, Nebraska and Colorado; from J. E. Nielsen, Chicago—18 specimens of algae, China and British Columbia; from Dr. Theodor Just, Notre Dame, Ind.—171 specimens of algae, Michigan and Indiana; from Otto Degener, Wailua, Oahu, Hawaii—498 herbarium specimens, chiefly Hawaii.

Department of Geology:

From Dr. Frederick W. Burcky, Evanston, Ill.—4 carnelian cabochons, a polished slice of red dinosaur bone, and a slice of carnelian, New Mexico, Colorado, and Utah.

Department of Zoology:

From Dr. Charles E. Burt, Winfield, Kans.—46 snakes, Kansas; from Walter F. Webb, Rochester, N. Y.—24 specimens of land shells, Philippine Islands; from Henry Dybas, Chicago—195 specimens of land shells, Mexico, and 126 insects and allies, Illinois; from Dr. C. H. Seevers, Chicago—335 insects and allies, Mexico; from Edward S. Cieslak, Chicago—69 garter snake skins, Illinois; from Chicago Zoological Society, Brookfield, Ill.—a roan antelope, a naked-tailed armadillo, and an Asiatic monkey.

The Library:

Valuable books from Carnegie Corporation, New York City; from Baker-Hunt Foundation, Covington, Ky.; from North Dakota Agricultural Experiment Station, Fargo, N. D.; from Dr. Henry Field, Washington, D. C.; and from Stanley Field, Henry W. Nichols, W. J. Gerhard, Dr. Earl E. Sherff, Miss Lillian Ross, and Dr. Fritz Haas, all of Chicago.

NEW MEMBERS

The following persons became Members of Field Museum during the period from November 16 to December 15:

Associate Members

Harold O. Barnes, Mrs. Ellis R. Lewis, Mrs. Donald MacMurray, John E. Thompson, S. J. Walpole.

Annual Members

Jens Agger, Herbert E. Bell, Charles A. Bellows, Milton D. Block, C. A. Borland, John H. Boss, Cornelius C. Cole, W. C. Dillon, Earl J. Jones, Harold J. Kamm, Leonard H. Kasbohm, Martin King, Philip Lome, Mrs. Grace Edwards Miller, M. Glen Miller, Ronald Miller, Albert Mohr, Jr., Edmund Daniel O'Connell, Frank Olsen, Thomas Erskine Pick, John McC. Price, Mrs. Robert M. Reichert, J. E. Rudney, Harry Sohn, Arthur T. Spencer, Morris E. Wolf.

Streamlining, so important in modern airplane and ship construction, is familiar in nature among birds and fishes.

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

FEBRUARY, 1943

No. 2

GIANT SPREADING LIVE OAK SHOWN IN NEW MURAL

BY B. E. DAHLGREN

CHIEF CURATOR, DEPARTMENT OF BOTANY

For the purpose of providing a series of murals to supplement the exhibits of plant life, Field Museum's former Staff Artist, the late Charles A. Corwin, in 1935 made several large size paintings of trees.

Work on this unfinished project recently has been taken up by Mr. Corwin's successor, the present Staff Artist, Mr. Arthur G. Rueckert. As a result two new paintings were added last month to the series in this hall. One of these represents a group of tree ferns in Java, the other a live oak tree. The latter, as illustrated on this page, represents, with a certain amount of artist's license as to its surroundings, a tree growing near Bartow in western Florida, as it appeared some years ago.

This is the well-known live oak or evergreen oak of the south Atlantic and Gulf states extending westward through Texas and northeastern Mexico. Sometimes only a shrub in

poor soil near salt water, it appears to reach its largest size on rich ground in the south Atlantic states. An example in *Garden and Forest*, figured from the neighborhood of Charleston, South Carolina, has a stem measuring twenty-three feet in circumference at its most constricted part, and a crown, past its prime and draped with Spanish moss, but spreading with a radius of fifty feet. Trees almost or quite as large are doubtless found in the Gulf states, e.g. in Louisiana. Surpassing all other oaks in grandeur and solidity, the live oak is widely appreciated wherever it grows and is often planted for its ornamental value, but it is also an important timber tree, esteemed for its excellent, hard and tough, brown wood,

well-known for hundreds of years as particularly suitable for shipbuilding. Sargent in his *Silva of North America* quotes official documents of the time of the war against Barbary pirates relating to acts of Congress by which large tracts of live oak in the southern states, e.g. on St. John's River in Florida, and in Texas, were reserved or acquired for the exclusive use of the U. S. Navy for the construction of men-o'-war.

RARE COSTUMES OF ABORIGINES IN WAR-MENAGED YUNNAN

BY C. MARTIN WILBUR

CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

In the months since the conquest of Burma, a Japanese army has been poised to strike at China from the rear—to strike as soon as the rainy season was over and the trails and roads in Yunnan province were passable again. The rains have now

ceased and there are five months of fine weather ahead in that backdoor province into which the Japanese are trying to lunge from bases in Indo-China, Thailand, and Burma. But Yunnan is tough country for any invading army.

It is extremely mountainous, with an average elevation of 6,000 feet. The western half is deeply trenched from north to south by the Salween, the Mekong, and several other major rivers. Its southern borders are a tropical jungle-land. Except for the famous Burma Road, which the Japanese now stride, and the narrow-gauge railway running north from Indo-China, most communication lines are only

narrow trails paved with cobblestones. But no region is impenetrable. The Chinese will have to defend the province bitterly, because on the south it guards China's new heart in the province of Szechwan.

Many peoples besides the Chinese and their formal allies have an interest in the defense of Yunnan. The province has been called an "Anthropological Museum" because it is the center of an area inhabited by some eighteen million non-Chinese aborigines. Most Americans have never heard the names of these peoples, and know nothing of their habits and culture.

STATUS LIKE THAT OF U. S. INDIANS

The status in China of such aboriginal groups as the Nosu, Moso, Miao, Yao,



MURAL OF LIVE OAK

A painting by Staff Artist Arthur G. Rueckert, recently added to the Hall of Plant Life (Martin A. and Carrie Ryerson Hall). This spectacular tree is of an evergreen species well-known in the south Atlantic and Gulf states. The mural is based upon an actual specimen grown in western Florida.

Among the four hundred and fifty or more species of oak which have been described there are many that resemble the live oak in character of foliage and fruit. One of these is the cork oak of western Mediterranean countries. Among the seventy-five species and hybrids of oaks recognized in the United States there are various other evergreen species some of which are also known as live oaks. They are confined, however, to the Pacific Coast states and are distinguished as California live oak, highland live oak, canyon live oak, etc. Some of these are also massive and beautiful trees but certainly none of them are very likely to be confused with the live oak of the southeastern and Gulf states.

Lisu, and many others, is analogous to that which the Indians possessed in America some decades ago. When the Chinese came in contact with the aborigines, the latter had developed only the simple folk culture of isolated peoples living in mountainous or jungle-covered country. During the last six or seven centuries they have been gradually subjugated by the expanding Chinese

who possessed a powerful state organization, great wealth, and far superior military organization. Their only chance of preserving cultural autonomy was to retreat into the most mountainous parts of the southwestern highlands, and yet for most of them even retreat was a losing struggle. Their native cultures have been slowly modified, and the recent westward rush of modern Chinese people and civilization has accelerated their cultural absorption.

Living in the provinces of Szechuan, Kweichow, Kuangsi, and Yunnan, as well as in the neighboring parts of Indo-China, Siam, and Burma, the aborigines are grouped into more than a hundred tribes and speak many different languages or dialects. One method of classifying them is to group them according to the languages they speak. (Language is closely associated with culture, in fact is one aspect of culture, but it is not a good index of race. For example, white and black Americans and many American Indians now speak the same language but represent three basically different races.) Among the aborigines there are three main language groups: (1) the Mon-Khmer language family, which includes the languages spoken by the Miao tribes; (2) the Shan; and (3) the Tibeto-Burmese, which includes, among many others, the languages of the Nosu, Lisu, and Kuopu peoples.

Field Museum has long exhibited the curious costumes and interesting implements and weapons of one of these minority groups—the Nosu. Recently the Museum placed on exhibition (Hall 32, Case 30) examples of clothing worn by the women of three other tribes—the “Flowery” Miao, the Lisu, and the Kuopu.

The dress of the Flowery Miao woman, which was acquired by the donor, Mrs. Frank D. Gamewell, in 1920 near the present Kunming, is handsomely decorated with both embroidered and quilted designs in red, blue, and white. The long sleeves

and the large collar covering the shoulders and back are covered with blue and white crosses outlined in red. The short skirt of blue printed cotton is pleated, and into the pleats red and yellow ribbons have been sewn. On the back of the collar are two rows of little brass bells, and also strings of colored beads with bunches of copper coins and silver bells dangling down the back. The Miao maiden who wore this dress must have made a gay appearance and produced a pleasant tinkling sound as she hurried to market along some mountain path. Her coins, which are all Chinese issues, bear dates from about 1650 to 1907.

The Miao are most numerous in Kweichow province, where they live in villages scattered throughout the mountainous regions. Most of them are farmers, and many of them are either tenants of Chinese landlords or virtual serfs of Nosu overlords. They have a poorly developed economy and no written language of their own, though in recent decades thousands have been educated in Christian mission schools—a work in which American missionaries have played a great role. Miao women continue to wear the gaily decorated and colorful costumes of the sort recently placed on exhibition by Field Museum. It is because of their costume that the Chinese call one group of them “The Flowery Miao.”

The Kuopu (or Kangi) tribe, a branch of the Nosu group of peoples, is one of the lesser known aboriginal folk in Yunnan province. They dwell in hamlets in the mountains north of Kunming, and live by farming and herding. They cultivate hillside patches of maize, buckwheat, oats, and wheat, and tend large flocks of sheep. The women spin and weave the hemp cloth from which they make their clothes, while the men spend some of their time hunting and trapping. The costume of the Kuopu woman, also a gift of Mrs. Gamewell, is a garish and rather ill-fitting affair. The bottom half of the blue skirt is stiff with tight pleats, averaging eighteen to the inch all around. The upper half is brightened by a broad band of red hemp cloth woven with horizontal blue, white, and green stripes. The same color combination appears minutely embroidered on a square bib in front, and panels behind that form a yoke-like apron worn on top of a blue serge jacket.

PEOPLE OF CHINA-BURMA BORDER

The third of the new costumes presented by Mrs. Gamewell is that of an upper class Lisu woman, and is strongly influenced by Chinese styles that prevailed for women near the end of the Manchu empire. Cut from dark blue cotton cloth, the costume consists of a pair of full trousers, a wide sash about ten feet long, and a full-sleeved, high-necked jacket trimmed with floral embroidery and buttoned down the right side. There are also pointed shoes, two hats

odd enough to please any modern lady, and a neck-band embroidered and appliquéd with silver beads. To complete her ensemble, every upper-class Lisu woman carried over her shoulder a voluminous handbag that would contain several of the larger handbags lugged about by ladies of fashion in Chicago. The Lisu are related to the Nosu, and live most numerous along the border of China and Burma—where Japan's drive up the Burma Road is now stalled—although they are found also north of Kunming, in which region the costume on display was collected.

Whereas the Miao are a subject people, the Nosu, or “Lolo” as the Chinese call them, have maintained a remarkable degree of independence in their stronghold, the Ta Liang mountain range in southern Szechwan, although elsewhere they, too, have been brought under Chinese rule. They are a people of fine physique, tall and comparatively fair, and they are great warriors. In the exhibition devoted to the Nosu (Hall 32, Case 26), one can see examples of the complicated hide armor, shields, swords, spearheads, and bows and quivers of the men, and the clothing, jewelry, and utensils of the women. This collection, one of the few in America, was made in 1914 by Mr. Camillo Schneider, and most of the weapons and fighting gear are no longer made by the Nosu. Aside from these exhibits of the indigenous peoples of southwestern China, Field Museum presents in the same hall an extensive exhibit of Mongol and Tibetan clothing, weapons, and objects of art and daily use.

SATURDAY MORNING PROGRAMS OFFERED FOR CHILDREN

The James Nelson and Anna Louise Raymond Foundation will present its annual spring series of free motion picture programs for children on Saturday mornings throughout March and April. The first program, on March 6, to be given at 10 A.M. and again at 11, is entitled “A Look Into India.” Three natural color talking motion picture films on this subject will be shown: “The Jungle,” “Land of Shalimar,” and “A Village in India.” In addition, there will be an animated cartoon, “Old King Cole.”

A complete schedule of all eight programs will appear in the March issue of FIELD MUSEUM NEWS. Children from all parts of Chicago and suburbs are invited. The programs will be presented in the James Simpson Theatre of the Museum. No tickets are needed for admission. Children may come alone, accompanied by adults, or in groups from schools, community centers, etc.

A bird that lays an egg weighing one-fourth as much as itself—the kiwi of New Zealand—is shown, together with its eggs, in a habitat group in Hall 20.



NOSU ARMOR
In Chinese aboriginal
collection—Hall 32

GIANT DEVIL FISH, CAUGHT IN GALAPAGOS BY MANDEL EXPEDITION, IS NOW EXHIBITED

By LOREN P. WOODS
ASSISTANT CURATOR OF FISHES

The giant devil fish has long been near the top of the list of animals especially desired for exhibition by Field Museum. Several expeditions both for fishes and other animals have been made to points along the Gulf of Mexico or in the eastern Pacific where these giant rays were plentiful, but other circumstances were never favorable because the difficulties accompanying the



MANTA—LARGEST SPECIES OF RAY

New exhibit in Hall of Fishes (Hall O). Specimen from Leon Mandel Expedition to the Galapagos. The fish is 10 feet long, 12 feet wide.

collecting and making of proper studies of any animal so bulky are enormous. Consequently, when the Leon Mandel Galapagos Expedition was organized in 1941, plans were made and the more difficult aspects concerning the field preparation of a large devil fish were discussed and prepared for.

The Pacific species of devil fish (*Manta hamiltoni*) was known to be especially abundant in the waters surrounding Indefatigable and South Seymour Islands in the Galapagos Archipelago. Here it was possible to select, from several that were seen in the course of one afternoon, a female specimen about ten feet long and twelve feet across. This was only a half grown example, but one of the fully grown ones of twenty to twenty-four feet in breadth with a weight of three or four thousand pounds would have been too large to handle or to exhibit in the best possible way. Even though our specimen was one of juvenile proportions, sixty continuous hours were required, working with all possible speed, to make a plaster mold of both top and bottom sides so that upon our return to Field Museum a complete reproduction in celluloid could be made.

Devil fishes are among the most specialized of the great group of sharks and rays. Although undoubtedly descended from flattened, bottom-living skates and rays, the devil fishes are no longer bound to this habitat, but are well adapted to a free swimming existence along shores and reefs at or near the surface of the sea. Their wing-fins are pointed, enabling them to swim easily yet rapidly, and thus to cover large areas in search of food. Their swimming motions greatly resemble those some of the largest soaring birds use in flying.

Part of the wing fin is separated and projects from the head as a broad, palmate flap; when tightly rolled it resembles a horn. It is this head fin's horn-like aspect plus the sooty black color of the back which has suggested the name devil fish. These "horns" may be tightly rolled as the fish cruises along, but when attempting to capture food they are extended and moved slowly back and forth in front of the mouth. They may even fold around forming a funnel, thus serving as hands do to guide food to the mouth.

Unlike that of the other rays, the mouth of the devil fish is broad, extending across the front of the head. The teeth, minute tubercles, number in the thousands and are arranged in rows over the lower jaw only. When the nature of the food is considered, this reduction of size of teeth is easily understood. Devil fishes feed on the small crustaceans, fishes, and other plankton found drifting at the surface of the sea. To obtain this food the devil fish simply opens its mouth and swims along, removing the nutritious organisms as the sea water is sucked into the mouth and strained out through the gills. There is a special sieving apparatus located just in front of the gills which is found in no other fish. This consists of rows of elongated plates the appearance of which has been likened to the stems of ferns with tiny leaflets turned backwards.

The largest devil fishes are usually solitary except in the case of a mated pair. It is not especially remarkable, however, to find several in a favorable feeding area. One of their most extraordinary habits, and one which has been often commented upon, is their graceful leaping and somersaulting.

The return to the water after a leap is often accompanied by a noise as loud as the report of a three-inch cannon. The leaping may be of the nature of play, but it may have the more practical effect of ridding the manta of the sucking fish, the remoras, which are usually found in some numbers fastened onto the gills and in the mouth cavity. On the specimen collected in the Galapagos four of these "louse-fishes" were found fastened to the gills, but had it been infested with twice this number it would not have been surprising.

So far as known, the young of devil fishes are produced singly, only one to a female during a season. They are born alive and in a well developed condition, able to swim and to feed immediately after their extrusion into the water. One newly born young was five feet wide, and this from an adult only fifteen feet in extent.

Devil fishes show no fear of men or boats, and frequently come so close that they are easily harpooned. Once harpooned, the killing and landing is likely to be not so simple because the devil fish is a strong fighter and often able to resist capture by sheer weight. Though they are at other times harmless to man, when harpooned they may turn on the boat and upset it or stove in the planking. The small one captured in the Galapagos fought its captors for almost two hours during which time it towed a large fishing cruiser for several miles. By finally planting a second harpoon in the wing so the fish was able to swim only in circles, it was brought close enough to the boat to be dispatched with several shots from a heavy rifle.

The flesh of the devil fish is quite wholesome and is eaten by natives along the tropical shores of various parts of the world.



MAKING CAST OF MANTA

Members of Leon Mandel Expedition to Galapagos at work in field on devil fish specimen from which new Museum exhibit has been prepared.

The liver, as in many other members of this great shark and ray group, produces a large quantity of valuable oil. The skin is often used as sandpaper when it is dried.

The specimen recently placed on exhibition in Field Museum's new Hall of Fishes (Hall O) was reproduced in celluloid by Staff Taxidermist Leon L. Walters.

CONSERVATION BRIEFS

I—Minerals

BY SHARAT K. ROY
CURATOR OF GEOLOGY

(NOW A CAPTAIN IN U. S. ARMY)

The United States is unusually favored in its natural resources. In such high tonnage minerals as coal, oil, and iron, it possesses adequate reserves. Likewise, it is abundantly supplied with most of the lesser essential materials. In fact, beyond any other country it enjoys self-sufficiency. Nevertheless, we are not wholly self-sustaining, nor are our natural resources unlimited. Unless non-essential and wasteful consumption of these irreplaceable assets is restricted by programs of conservation, they will soon be exhausted and we will be forced to depend more on foreign countries for raw materials to maintain our economic structure and industrial production.

THAT WHICH IS USELESS TODAY MAY BE ESSENTIAL TOMORROW

As matters stand today, there are a dozen or more vital raw materials classed as "strategic," of which we are woefully deficient and for which we are dependent in whole or in part on sources outside the continental limits of the United States. A special exhibit of these, with a large map showing the various parts of the world from which they are obtained, is now on public view in Stanley Field Hall. This dependence on foreign sources for strategic materials is disquieting, and may shock many who have unconsciously become over-confident in the strength of America's vast natural resources. It is thus all the more imperative that we conserve what we have if we are to exist as a great industrial power and preserve our present status among the nations.

Not only must we conserve the resources that are economically profitable—we must also guard our future by conserving those that now seem valueless. The time inevitably and invariably comes when, through improved conditions or better methods of processing, what was useless to our generation becomes a godsend to another. One may not see how minute quantities of copper and a little gold and silver can be recovered from low-grade ore to any advantage, and yet the future may reveal ways and means which will convert such present impracticabilities into profitable enterprises.

MUST CONSIDER BEAUTY AS WELL AS UTILITY

Judicial exploitation of economic resources alone, however, does not satisfy our program of conservation. In time of war, the importance of raw materials, because of their indispensability in industries, bulks larger than ever, and we are apt to lose sight of certain other natural assets which directly or indirectly enrich our national life. Hills, valleys, lakes, canyons, caverns, streams and

other earth sculptures may not appear so essential as tin, chromium, or manganese, but they do constitute the scenic grandeur of the land. They furnish background for man's esthetic appreciation of nature, as well as providing homes for all vegetation and wild animal life. Streams, if allowed to be filled with sewage and industrial wastes, will rapidly lose their pristine beauty and destroy the aquatic life inhabiting them. Wooded hills, if allowed to feel the vandal's ax, will lose their native beauty and soon erode away, giving to desolation and ruin vast sections of the country.

All in all, be it raw materials essential to industry or landscape features essential to our esthetic appreciation, we cannot afford to exploit either beyond our legitimate needs. We can best pay our tribute to Nature for the blessings we are enjoying by using its resources judicially and economically.

(Next issue:—Conservation of
Mammalian Life.)

SLAVERY AS PRACTISED IN ANCIENT CHINA

In ancient times the very practical Chinese, confronted with the problem of what to do with people convicted for making counterfeit money, put them to work in the mint making legitimate money!

This is one of countless historical oddities, anecdotes and legends included in *Slavery in China During the Former Han Dynasty* (206 B.C.—A.D. 25), a book of more than 480 pages, by Dr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology at Field Museum.

Slaves were owned not only by wealthy individuals privately, but the government itself held many to perform various services, Dr. Wilbur reveals. The bureaucracy of the government, insofar as minor functionaries was concerned, was composed largely of slaves, rather than of the type of "pay-rollers" with which modern governments are sometimes charged by opposition parties.

One of the most violent stories related in the book is that of King Liu Ch'u in 71 B.C. It "was considered that he had been indecent and cruel" in that he "had rejected his teacher's advice," killed the teacher and his son, roasted and boiled one of his wives and sliced another alive, and killed sixteen other innocent people. As a punishment for all this it was decided the king ought to suffer execution, but the Emperor "could not bear to do this." So the king was banished with "an estate of a hundred households." The king, however, committed suicide.

Summarizing the general contents of the book, Dr. Wilbur writes:

"Industry and commerce developed rapidly in China during the last three centuries before Christ. Contemporary Hellenistic and Roman business men made extensive use of slave labor. Nothing comparable

occurred in China. Private and government slavery had a marked growth under the Han empire, but industrialization did not become an important characteristic.

"There are more historical data on slavery during the four and a quarter centuries of the Han period than during the millennium preceding or the four centuries following. Slavery was an integral part of the social system. Various evidences, such as laws regarding enslavement as a punishment for certain crimes, special taxes on slave owners, legislation that limited the master's disciplinary powers, and the inferior status of slaves before the law, show that it was legally established. There was an abolitionist sentiment in the Confucian school of officials and 'social scientists.'

"Han slavery was not caste bound as it tended to become in later Chinese periods. There was a fluidity of transfer from free to slave status, and from unfree to full plebeian rank in one step. It was even possible for an ex-slave to marry his former owner. The servile population, apparently small and well infused, seems to have composed only one to five per cent of a population which reached about 60,000,000. There were no known slave revolts, even though private male slaves were commonly armed and were often used by their master for local terrorism.

"There was government and private ownership of slaves, and there were native and foreign slaves. There were hereditary, criminal, and debtor slavery, self-sale and selling of women and children under economic pressure, kidnapping, slave raiding, and enslaving of prisoners of war. The trade included government as well as private selling, public slave markets, probably dealers in specially trained slaves, and organized importing and exporting. We know much less about the economically productive uses of servile labor than about slaves employed as grooms and domestic servants, mounted and armed bodyguards, tomb watchers, musicians, dancers, and other entertainers, or used as personal attendants, confidential advisors and business managers. Public slaves did the servant work in palaces and government bureaus, held petty bureaucratic positions as clerks, accountants, timekeepers, ushers, etc., and engaged in some skilled handicrafts, in game keeping and ranching, as well as in the imperial grain transport and a few other lines of heavy gang labor."

Highly polished armlets of green soapstone are displayed with other personal ornaments of the Tuareg of the Sahara, in Hall E, Case 12. The armlet is made by rubbing away all the central portion of a stone disk by use of sand and water. The armlet is then steeped in oil; it is worn only by a youth who has attained the status of manhood.

MUSEUM'S COLLECTIONS USED FOR WORK WITH THE BLIND

During several months in the past year, Field Museum's collections, especially in the Department of Anthropology, have been made available for special work with the congenitally blind. The activity has been conducted by Mr. Donald Hesson, a blind attorney-at-law whose avocation is aiding others who are sightless, and Mrs. Hesson (Marie Seton), a former British journalist who became interested some years ago in the problems of the blind from a social service standpoint. For the work at Field Museum a room was assigned to Mr. and Mrs. Hesson, and a group of twelve blind persons ranging in age from 16 to 42 was in attendance. The latter acted as subjects in preliminary experiments, conducted twice a week, to obtain records of their reactions in handling selected material.

Similar work has been carried on by this group at other institutions. The material used has fallen into the following categories: works of three-dimensional art, at the Art Institute of Chicago, and the Oriental Institute of the University of Chicago, including sculpture, bas-relief, and ceramics; anthropological material at Field Museum, including life and death masks, models, implements, weapons, handcraft objects, ceremonial objects, and textiles; abstract forms at the Chicago School of Design; and, at the Museum of Science and Industry, mechanical devices including farm machinery, vehicles, and models. These media were chosen because they offered an obvious though comparatively unexplored field in which to study the concepts of the blind.

STUDY OF TACTUAL IMPRESSIONS

The research was premised on the belief that it might be possible to ascertain the actual limitations imposed by blindness upon the development of concepts. This problem was approached by a method of observing reactions to impressions gained by touch of concrete objects, the understanding and appreciation of which is generally supposed to depend upon sight. Thus it was possible to attempt evaluation of the extent to which the tactual sense could be trained to substitute for sight.

When the blind people are shown an object, no verbal description or clue is given as to what it represents. They are asked to give the impression that they derive from examining the object. It is then observed how the individual uses his hands and what his general expression and demeanor are while making the examination. This information, together with the person's detailed impression of the object, is recorded, and compared with the impressions of other people examining the same object. This makes it possible to follow the development not only of each person's concepts but also of any change that may take place in the external expression of each one's personality.

That blind people require oral description and reading illustrated by direct tactile examination, wherever possible, in order to develop and clarify their concepts is indicated by the following opinion from a sixteen-year-old girl after she had examined the Races of Mankind bronze sculptures by Malvina Hoffman at Field Museum:

"I lost my sight when I was a little over a year old; therefore, I have never since seen any person's face or features except my own. Being small of stature, I have not even been able to picture accurately a tall strong person, much less the physical aspects of other races and nationalities. I was quite overwhelmed by what I saw* Friday. By touching the statues I got all the varieties of faces, facial expressions, figures, and even dress which I have wondered about. Studying the bronzes even produced reasons as to why some races conquer, others are defeated, and still others though conquered cannot be subdued. Now when I hear or read about the appearance of other people, I have some definite picture in my mind."

RACIAL CHARACTERISTICS LEARNED

During the first few weeks of experimentation at Field Museum, a number of objects showing the work of the American Indians from Alaska to Peru were laid out on one table. On a second table were a number of life and death masks so exhibited that people could move them about and compare different races. The blind people were not told what racial group they were examining and comparing, nor were they given any oral descriptions until they had completed their own manual examination. Only when they had finished "looking" at the masks and objects were they informed as to the race of the heads they had "seen" and the nature and use of the other objects. Up to this time most of these people had no knowledge of the differences in physiognomy between races. Those people born blind, for example, did not associate a broad flat nose and thick lips with the Negroid type—as a matter of fact, most of them had never before examined any face other than their own. Notes taken verbatim while they were making their examinations indicate that the impressions gained by touch closely approximate those that the sighted gain visually. The correlation of details remains in the memory so that they may relate one type of nose to another after a period of several weeks or months. It is interesting to note that people who have *never* had sight express definite opinions as to what is "a nice face" or, alternatively, "an unpleasant face."

*The blind almost invariably refer to "seeing" things they touch.

The artifacts of the Eskimos bear a curious resemblance to those of races which lived in Europe at the close of the glacial period. Exhibits pertaining to Eskimo life occupy about one-third of Hall 10 in the Department of Anthropology.

THINGS YOU MAY HAVE MISSED

Fulgurites

Everyone is familiar, if not by experience at least from their reading, and from pictures, with the damage by lightning to buildings and trees, but few know of the peculiar effects left by a bolt of lightning when it strikes into the ground. These effects are well exemplified in a collection in Clarence Buckingham Hall (Hall 35). When a bolt



Photograph courtesy of The Chicago Tribune

LIGHTNING-FUSED SAND TUBE

Mr. Henry W. Nichols, Chief Curator of Geology, displays fulgurite specimen from Indiana sand dunes. An oddity exhibited in Clarence Buckingham Hall (Hall 35).

of lightning strikes into soil, the soil melts as might be expected. Owing to the high voltage of lightning there is a strong electrostatic repulsion between the particles of the molten soil which makes them fly apart so that, when cooled, instead of a rod penetrating the earth, there is a tube which has been given the name fulgurite from the Latin word for lightning, *fulgur*. The wall of the tube is fragile, rough, and of the thickness of an egg shell. These features are well shown in a giant fulgurite from the sand dunes at Chesterton, Indiana, which occupies a case by itself. Although this is eight feet long it is only part of the complete fulgurite, and no one knows how far into the sand it penetrated. When lightning strikes into solid rock the results are the same except that there may be more melted rock and the tubes are smaller. In one from Mt. Ararat, where Noah's Ark is reputed to have landed, the tubes from many strokes are small, only one-sixteenth of an inch and less in diameter.

—H.W.N.

A model showing the internal structure of a volcano is exhibited in Clarence Buckingham Hall (Hall 35), together with specimens of the materials erupted by volcanoes.

"Scarce as hen's teeth" is a familiar saying, but various types of prehistoric birds known as fossils had well developed teeth (see case in Hall 21).

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. McCORMICK BLAIR	CHARLES A. McCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN

JOHN P. WILSON

OFFICERS

STANLEY FIELD.....	President
ALBERT A. SPRAGUE.....	First Vice-President
SILAS H. STRAWN.....	Second Vice-President
ALBERT B. DICK.....	Third Vice-President
*CLIFFORD C. GREGG.....	Director and Secretary
ORR GOODSON.....	Acting Director and Acting Secretary
SOLOMON A. SMITH.....	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD.....Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN.....	Chief Curator of Anthropology
B. E. DAHLGREN.....	Chief Curator of Botany
HENRY W. NICHOLS.....	Chief Curator of Geology
KARL P. SCHMIDT.....	Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE.....Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

WAR AND GAS RATIONING REDUCE ATTENDANCE

The general preoccupation of the public with war activities, and, in particular, transportation difficulties due to the tire conservation program throughout 1942 (accentuated toward the end by gasoline rationing) were the apparent causes of a large decline in attendance at Field Museum. The number of visitors received in 1942 was 1,025,002, as compared with 1,358,147 in 1941. Of these, only 79,144 visitors came on the four days of the week when a nominal admission fee (and Federal tax) is charged, as against 86,531 in 1941; all the rest came on the three free days—Thursdays, Saturdays and Sundays—or were of classes such as children, teachers, Museum members, etc. who are admitted free on all days.

Especially affected by the war situation was the Museum's expeditionary program. This had already been curtailed prior to December 7, 1941, and since that time no new expeditions have gone into the field. Those which were in operation prior to that time—in Peru, Honduras, and Guatemala—remained until their work was concluded. No new expeditionary work is contemplated for the duration of the war.

Despite the fact that 28 members of its scientific staff and other personnel, as well as four members of its Board of Trustees, have gone into war service, the Museum has maintained a program of activity at home as nearly normal as possible. Many

important new exhibits were completed and opened to the public, and the regular courses of lectures for adults, Sunday "Layman Lectures," entertainments for children, and daily guide-lecture tours were conducted on the usual scale.

School extension work, including the sending of traveling exhibits to the Chicago schools by the N. W. Harris Public School Extension Department, and of lecturers by the James Nelson and Anna Louise Raymond Foundation, continued on as heavy a schedule as conditions permitted. A number of new activities were undertaken, in which the Museum in various ways assisted the government in projects bearing upon the nation's war effort. For the public the Museum offered special lectures on "Backgrounds of the War" and installed a number of special exhibits such as one on strategic materials.

President Field Begins 35th Year; All Officers Re-elected

On January 11, Mr. Stanley Field began his thirty-fifth year of continuous service as President of Field Museum, having first preceded to that office in 1909. He was re-elected for the present year at the Annual Meeting of the Board of Trustees held January 18. All other Officers who served during 1942 were re-elected. They are: Colonel Albert A. Sprague, First Vice-President; Mr. Silas H. Strawn, Second Vice-President; Mr. Albert B. Dick, Jr., Third Vice-President; Colonel Clifford C. Gregg, Secretary; Mr. Orr Goodson, Acting Secretary, and Mr. Solomon A. Smith, Treasurer and Assistant Secretary.

Staff Notes

Four more stars were added to the service flag of the Museum last month.

The number of Museum men now in war service is 32, including four members of the Board of Trustees, and 28 employees out of a total personnel of 206.

Mr. George A. Richardson, a Trustee, has been commissioned Lieutenant-Colonel in the Engineer Division of the Air Transport Command.

Mr. Herbert Nelson, of the maintenance force, has joined the Navy as a painter first class. Mr. Frank Dukovich, also of the maintenance division, and Mr. Raymond J. Connors, guard, have become privates in the Army.

Lieutenant Rupert L. Wenzel (Assistant Curator of Insects, now on leave from the Museum) on duty at Camp Meade, Maryland, visited the Museum during a brief furlough January 15.

Mr. Bryan Patterson has been appointed Curator of Paleontology. He has been Acting Curator since the retirement last year of Mr. Elmer S. Riggs, and previous

to that had been Assistant Curator. Since 1926 he has been prominent in conducting Museum expeditions, and has contributed extensively to scientific literature in his special field.

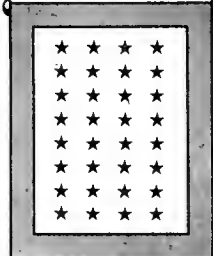
Mr. Karl P. Schmidt, Chief Curator of Zoology, visited the Illinois State Museum at Springfield and lectured on geography and natural history of the South Sea Islands, on January 17.

Correction on Book Price

By error, the price of the book *Mountains*, by Carroll and Mildred Fenton, was advertised in the January issue of FIELD MUSEUM NEWS as \$1.50. The Museum Book Shop now advises that the correct price is \$2.50. Postage on mail orders is paid by the Museum.

FIELD MUSEUM HONOR ROLL

Now in the Nation's Service


Army THEODORE ROOSEVELT, Trustee—Brig. Gen. GEORGE A. RICHARDSON, Trustee—Lt. Col. CLIFFORD C. GREGG, Director—Colonel, G.S.C. DR. JOHN RINALDO, Associate, Southwestern Archaeol.—Staff Sgt. DR. SHARAT K. ROY, Curator, Geol.—Capt. D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Pvt. EMMET R. BLAKE, Asst. Curator, Birds—Corp. RUPERT L. WENZEL, Asst. Curator, Insects—1st Lt. WILLIAM BEECHER, Temp. Asst., Zool.—Pvt. HENRY HORBACK, Asst., Geol.—Pvt. JAMES C. MCINTYRE, Guard—2nd Lt. RAYMOND J. CONNORS, Guard—Pvt. FRANK DUKOVICH, Janitor—Pvt.
Navy LESTER ARMOUR, Trustee—Lieut. Comdr. JOSEPH NASH FIELD, Trustee—Lieut. (S.G.) COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut. (S.G.) DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol. and Archaeol.—Ensign JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics) PATRICK T. McENERY, Guard—Master-at-Arms JOHN SYCKOWSKI, Guard—Ch. Commissary Steward GEORGE JAHRAND, Guard—Ch. Water Tender CLYDE JAMES NASH, Guard—Ch. Gunner's Mate NICHOLAS REPAR, Printer—Aviation Machinist's Mate 3C. MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C. HERRERT NELSON, Painter—Painter 1C.
Marine Corps MELVIN A. TRAYLOR, JR. Associate, Birds—2nd Lt.
Coast Guard M. C. DARNALL, JR., Guard—Seaman 2C. JOHN MCGINNIS, Guard—Ch. Boatswain's Mate
Other Services BERT E. GROVE, Guide-Lecturer—American Field Service (N. Africa) RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U.S. Government

ILLINOIS MAMMALS SHOWN

An exhibit showing the principal kinds of mammals that inhabit Illinois, designed especially for the use of school children, boy and girl scouts, teachers, and scoutmasters, but of interest also to other residents of this state, has recently been added to George M. Pullman Hall (Hall 13). This exhibit demonstrates, among other things, that our



OVER-RATED WEATHER PROPHET

The groundhog, or woodchuck, which achieves newspaper prominence on February 2 each year due to the apocryphal story relating its shadow to the length of the winter. One of the Illinois mammals included in new exhibit.

own animal neighbors, although all comparatively small, are in their own way just as interesting as the more spectacular lions of Africa, tigers of Asia, and other large game beasts.

Many of the mammals in the exhibit are found in Chicago and its immediately surrounding area, according to Mr. Karl P. Schmidt, Chief Curator of Zoology. Some of these are invaders from the north, like the weasels that change from a brown summer coat to the white "ermine" in winter, prized as a fur for women's clothing. The opossum, on the other hand, is an invader from the south that became abundant in the Chicago region in recent decades, spreading northward from southern Illinois.

Other representatives of the Illinois fauna included in the display are the red fox, gray fox, coyote, raccoon, skunk, mink, opossum, badger, and cottontail rabbit. Many visitors are surprised to see the gray fox shown on the branches of a tree. This fox so habitually takes to rail fences and leaning trees that it is known in many places as the "tree fox." One division is devoted to mice—the house, prairie, meadow, jumping, lemming, mole pine, prairie deer and woodland deer varieties. The woodland deer mouse is the most abundant of the state's mammals, and has a habit of appropriating birds' nests for its shelter. Another division shows such animals as the least weasel, prairie mole, pocket gopher, woodchuck, chipmunk, long and short-tailed shrews, muskrat, and various squirrels—

fox, gray, ground, red, thirteen-lined, and flying. Bats are represented by the red, silver-haired, hoary, big brown and little brown species. The exhibit was prepared by Staff Taxidermist W. E. Eigsti.

"The larger mammals which formerly occurred in Illinois were, as in other places, the first to disappear in the face of man's encroachments, because of their value for food and as skins," says Curator Schmidt. "Among these former Illinoisans were the bison, elk, white-tailed deer, cougar, timber wolf, black bear, marten, fisher, otter, bobcat and lynx."

IDENTITY OF RARE BLACK JADE ESTABLISHED AT MUSEUM

Field Museum recently aided in identifying the true mineral nature of a valuable antique, saving the owner financial loss.

Mr. R. Bensabott, a well-known importer of Chinese art, brought to Mr. Henry W. Nichols, Chief Curator of Geology, a snuff bottle, carved from rare black jade, which he had imported from China. One of his customers had taken the bottle to a New York jewelry house and been told, after what must have been superficial examination, that it was only agate. If it were agate it would be worth only about \$25, whereas, if it were black jade it would be worth about \$1,000. A variety of identifications was obtained, but none confirmed the material as jade. Therefore, Mr. Bensabott asked the Department of Geology of Field Museum to determine whether it was jade or not.

Ordinarily, says Curator Nichols, a few particles would be scraped from such an object and submitted to microscopic and chemical examination, but in this case it was necessary to proceed without injuring the high polish. A careful study of the surface under a lens showed that it had the color variation pattern of jade. Its specific gravity was found to be that of jade. It was heavier than would be possible if it were agate, or any of the other stones with which it had been identified.

Next, Mr. Nichols determined its index of refraction. This is a number recording the degree of bending in a ray of light when it enters the mineral. This index was found to be that of jade, far higher than that of agate and unlike that of any other mineral that it could possibly be.

These tests proved the bottle must be jade. To make assurance doubly sure, Mr. Bensabott had the bottle submitted to X-ray analysis. This treatment not only tells what elements are in the mineral, but gives the arrangement of the atoms (the space lattice) and their distance apart. This absolutely sure test confirmed Field Museum's identification.

There is still adequate transportation to Field Museum by bus, street car, "L", etc.

NEW ARCHAEOLOGY HALL OPEN

In accordance with the plans announced in the January FIELD MUSEUM NEWS, the first section, "Indian America," of the Hall of New World Archaeology (Hall B) was opened January 25 with a preview and tea for Members of the Museum, the press, and other invited guests. The general public was admitted on the following day.

Mrs. William B. Greenlee and Mrs. George A. Richardson were hostesses at the tea. They were assisted by two Indian girls in native costume—Miss Erma Hicks, of the Cherokees of Oklahoma, and Miss Bernice Bonga, of the Chippewas of Minnesota. Both young ladies are members of the staff of the Department of Interior's Office of Indian Affairs which was recently moved from Washington to Chicago.

Also mingling with the guests were Mr. Stanley Field, President of the Museum; Mr. Orr Goodson, Acting Director; Dr. Paul S. Martin, Chief Curator of Anthropology, under whose supervision the new hall was created; Mrs. Alexander (Anne Harding) Spoehr, the artist who prepared the maps, sketches and color scheme of the new exhibits; Miss Dixie Davis, who assisted in the art work; Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation; Mr. Donald Collier, Assistant Curator of South American Archaeology and Ethnology; Mr. George Quimby, Assistant Curator of North American Archaeology, and Mr. Alfred Lee Rowell, Dioramist.

Work is now progressing on the other sections of the hall.

War Production May Benefit from this Coincidence

Recently some men considering manufacture on a large scale of certain special equipment needed in the Army and Navy consulted the Department of Geology at Field Museum to obtain needed information. While the consultation was under way another visitor appeared on entirely different business. It developed in the course of conversation that he was actively engaged in searching for the raw material needed for this special equipment, and had made a careful study of all stages in its manufacture. He was able to tell the first men much that they needed to know, and to suggest means of avoiding the troubles that are seriously diminishing the output of other manufacturers of this tool. What the result will be cannot well be predicted, but it may be that this meeting at Field Museum will result in an ample supply of this necessary apparatus.

That these two parties happened to come at the same time impressed the geologist as one of those remarkable juxtapositions of actual events which probably cause many people to believe in superstitions, telepathy, clairvoyancy, and so forth. —H.W.N.

CAVE MEN ARE SUBJECT OF SUNDAY LECTURES

After an absence of one month to fill lecture engagements out of the city, the Layman Lecturer, Mr. Paul G. Dallwig, will resume his Sunday afternoon presentations at Field Museum in February. Each Sunday this month, for limited groups of persons whose reservations are made sufficiently in advance, Mr. Dallwig will dramatize the subject "Digging Up the Cave Man's Past." The features of this lecture are outlined by Mr. Dallwig as follows: "We trace the evolution of man, and his cultural development through the Old and New Stone Ages, with special attention to prehistoric art. An intimate visit is made to the Neanderthal family in their cave home, and to the later Cro-Magnons, Sun-worshippers, and Swiss Lake-dwellers. The most dramatic incident is the re-enactment of a prehistoric murder as it might have occurred due to jealousy over the beautiful Magdalenian woman whose skeleton is on exhibition at the Museum together with the weapon that killed her."

The lecture is illustrated with the exhibits in the Hall of the Stone Age of the Old World including the eight unique dioramas restoring various races of prehistoric man.

The Sunday afternoon Layman Lectures begin promptly at 2 P.M. The heavy demand by the public, and the necessity for limiting each audience to 100 adults (children cannot be accommodated), make it necessary to require advance reservations. Persons desiring to attend are advised to apply several weeks in advance. Applications for reservations will be accepted by mail or telephone (WABash 9410).

In March Mr. Dallwig's lecture subject will be "Who's Who in the Mounted Zoo."

SATURDAY LECTURES FOR ADULTS TO BEGIN IN MARCH

The annual Spring Course of free illustrated lectures for adults will be presented at Field Museum on Saturday afternoons during March and April. The first lecture, on March 6, will be "A Naturalist in the West." Mr. Karl Maslowski, well-known for his work as Curator of Birds for the Cincinnati Society of Natural History Museum, as photographer-naturalist for the Ohio Division of Conservation, and as a lecturer on nature study at the University of Cincinnati, will be the speaker. He will illustrate his talk with several reels of natural color motion pictures.

The Saturday lectures begin promptly at 2:30 P.M., and are given in the James Simpson Theatre of the Museum. All are illustrated with films or slides. The demand for seats makes it necessary to restrict admission to adults, but on the mornings of the same Saturdays the James Nelson and Anna Louise Raymond Foundation will

present free motion pictures for children. A complete schedule of the subjects and speakers will appear in the next issue of FIELD MUSEUM NEWS.

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WABash 9410) or in writing, and seats will be held in the Member's name until 2:30 o'clock on the day of the lecture. All reserved seats not claimed by 2:30 P.M. will be made available to the general public.

PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN FEBRUARY

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays, and certain holidays.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these follows:

Wednesday, Feb. 3—Sources of Materials Strategic to America (Miss Marie Pabst).

Friday, Feb. 5—Animals Beneficial and Harmful to Man (Miss Elizabeth Best).

Wednesday, Feb. 10—Effects of Climate on Man (Miss Loraine Lloyd).

Friday, Feb. 12—Special for Lincoln's birthday: Plants and Animals of Illinois (Miss Marie Pabst).

Wednesday, Feb. 17—Hunted and Hunting Animals (Miss Elizabeth Best).

Friday, Feb. 19—Plants and Animals Through the Ages (Miss Miriam Wood).

Monday, Feb. 22—Special for Washington's birthday: Cherry Trees and Their Relatives (Miss Marie Pabst).

Wednesday, Feb. 24—Science Marches On (Miss Loraine Lloyd).

Friday, Feb. 26—Animals Found Around Chicago (Miss Elizabeth Best).

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

Department of Botany:

From Dr. Walter Kiener, Lincoln, Nebr.—818 miscellaneous cryptogams, Nebraska and Colorado; from William A. Daily, Indianapolis, Ind.—568 specimens of algae, Indiana, Ohio, and Kentucky; from Otto Degener, Waialua, Oahu, T. H.—111 herbarium specimens, Hawaii; from José Ignacio Aguilar, Guatemala City, Guatemala—827

herbarium specimens, Guatemala; from Dr. Henry Field, Washington, D.C.—75 cryptogams, Virginia; from Harry K. Phinney, Albion, Mich.—97 specimens of algae, northern Michigan.

Department of Geology:

From Dolese and Shepard Company, Chicago—a specimen of cephalopod, Illinois; from Grayson Meade, Lubbock, Tex.—6 coprolite specimens and a fossil egg, northwest Nebraska badlands; from G. Ruegg, La Junta, Colo.—a natural mold of dinosaur track and 3 polished specimens of red dinosaur bone, Colorado.

Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—22 birds and 4 mammals, including a juvenile gorilla; from Lincoln Park Zoo, Chicago—a blesbok and 2 reptiles; from Walter F. Webb, Rochester, N. Y.—500 specimens of land and fresh-water shells, Philippine Islands; from Joe Fanning, Tucson, Ariz.—skeletons and skulls of 7 mammals, Arizona; from David Gitlin, New York City—developmental series of frog embryos, Puerto Rico; from Monsignor Federico Kunardi, Tegucigalpa, Honduras—3 bats, Honduras.

The Library:

Valuable books from Dr. Henry Field, Washington, D.C.; from Dr. Paul Hönigsheim, East Lansing, Mich.; from Stanley Field, Lake Bluff, Ill.; and from Henry W. Nichols, Dr. Wilfred H. Osgood, William J. Gerhard, Dr. Fritz Haas, Dr. Reuben Myron Strong, and Dr. Earl E. Sherff, all of Chicago.

Examples of more than a hundred families of mollusks, arranged in their systematic order, are exhibited in the Hall of Lower Invertebrates (Hall M).

NEW MEMBERS

The following persons became Members of Field Museum during the period from December 16 to January 15:

Contributor

Louis L. Valentine*

Life Member

Ronnoc Hill Connor

Associate Members

Alexander Beck, Hyman Bolotin, Miss Sophia C. Camenisch, Donald N. Gellert, Francis Heisler, Timothy Mojonier.

Sustaining Members

John W. Page

Annual Members

William R. Austerlode, Mrs. Loudon L. Bomberger, Rev. Joseph A. Casey, Dr. G. L. Christopher, Leopold E. Cole, M. M. Cole, Gerard Darrow, Mrs. William Warren Dixon, Howard F. Hasbrook, Hyman Hatowski, Mrs. Emanuel Loewenstein, A. Kip Livingston, Halsey Matteson, Dr. B. J. Mix, George Moeller, Rev. Walter K. Morley, Richard E. Pritchard, Miss Pearl A. Rybar, Mrs. Josephine Rocca, S. E. Ullmann.

*Deceased

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

MARCH, 1943

No. 3

FOSSIL'S 30-MILLION YEAR HISTORY TRACED FROM BURIAL TO DISCOVERY

By PAUL O. MCGREW
ASSISTANT CURATOR OF PALEONTOLOGY

"How do you know where to look for them?"

"How do you suppose they got there?"

"How do you go about digging them up?"

"Are they really turned into rock?"

These are some of the questions most commonly asked about fossils. The first of a new series of exhibits which will answer these and other general questions about

searching for "petrified bones." A few relatively simple facts should enable such people to collect intelligently and to realize lasting satisfaction from their efforts by helping to unravel knotty problems concerning the life of the past. Aside from furnishing general information to the average Field Museum visitor, the facts revealed in this new exhibit may serve the practical function of encouraging people to save important fossils which otherwise

a small rhinoceros (*Hyracodon*) that lived during the Oligocene epoch (some thirty million years ago). Although the death of the hero usually marks the end of a tragedy, the death of *Hyracodon* is only the opening chapter of our story. The first scene shows his bleached skeleton lying on the flood plain of an Oligocene stream. Such streams were numerous at that time and meandered widely over the plains east of the Rocky Mountains. Ordinarily skele-



THIRTY MILLION years ago a bleached rhinoceros skeleton lay on a flood plain east of the Rocky Mountains.



A FLOOD carrying large quantities of clay and mud from the distant mountains rolled over and inundated the plain.



SEDIMENT left by the receding water buried the skeleton (shown in section) and protected it from damage.



SEDIMENTS DEPOSITED during many millions of years accumulated and buried the skeleton still deeper.



AS THE REGION ELEVATED, the increased stream gradient caused deposition to stop and erosion to begin.



CANYONS WERE CUT into the ancient sediments, and now by careful search the exposed fossils may be found.

fossils and their broad significance recently has been installed in Ernest R. Graham Hall of Historical Geology (Hall 38).

The public obviously has little knowledge of the way fossils are preserved or how they are properly collected. This lack of information has resulted in the innocent destruction of an enormous number of specimens, which, had they reached the hands of a specialist, might have been of untold scientific worth. Many people living near fossil-bearing deposits find relaxation in

might be destroyed by careless collecting.

The exhibit is divided into three parts, the first of which consists of six original oil paintings by Mr. John Conrad Hansen. These depict the principal stages in the history of a fossil from death to discovery, and thus represent a scene in the same locality through a period of thirty million years, with the most important geological changes which have occurred during that great span of time.

The "leading character" in this story is

tons lying exposed in such a place were scattered by carnivores or destroyed by the weather. Occasionally, however, the bones were protected as illustrated in the second and third pictures.

Heavy rains in the mountainous highlands turned streams and their tributaries into raging torrents. Rushing down the mountain valleys the flood waters picked up countless tons of mud, clay, and sand, products of weathering rock. Upon reaching the flat plains the waters spread and

inundated large areas. Having lost its great velocity, the water was no longer able to transport the heavy load it had carried down from the mountains. This resulted in the deposition of an expansive blanket of sediment over the region when the flood waters receded. The sediment buried the skeleton and protected it from damage.

During the succeeding millions of years this process was repeated time after time until hundreds or even thousands of feet of clay and sand covered the skeleton. Because of obvious limitations the great depth to which specimens are usually buried cannot be shown in the fourth picture which represents this stage. During this time the surface of the area also was subjected to many changes. The streams changed their courses continuously, and the mountains were gradually worn down by the loss of so much material.

After these millions of years of deposition a change took place that completely reversed the process that had gone on so long. The entire region was elevated, the gradient and velocity of the streams increased, and deposition no longer took place. The streams and tributaries cut deep valleys, large regions became dissected by deep gullies, and thereby a period of erosion was initiated. With continuation of this process, canyons cut deeply into the deposits that were laid down at the time the rhinoceros lived. By this means—fortunately for the paleontologist—the skeleton was again exposed to view.

Our last scene shows a portion of the Bad Lands of Nebraska, South Dakota, and Wyoming as they appear today. The skeleton, now petrified, is being collected by a fossil hunter who, after careful prospecting, has discovered the bones weathering out of a canyon wall.

During the time the bones lay buried, their chemical composition was altered by the action of ground water that carried mineral in solution. The type and amount of alteration varies considerably, and examples of the more important types are shown in the exhibit.

Once discovered, a fossil must be collected with great care. As the top of the specimen is uncovered with small tools, repeated coats of thin white shellac are applied. This penetrates the cracks and pores, and when hard lends considerable strength to the fossil. After the top is covered with a layer of tissue paper it is bandaged with burlap dipped in plaster of Paris. Not until the plaster is hard is the specimen removed from its original position; then it is carefully turned over and receives the same treatment on the under side. When the fossil is completely encased in the plaster jacket it may be handled and transported in comparative safety.

This modern technique of collecting fossils is vividly illustrated in the exhibit

by a series of five models made by Mr. Orville L. Gilpin. These show the most important steps in the procedure.

THINGS YOU MAY HAVE MISSED

A 312-Pound Lapis Lazuli

One of the largest masses known of the semi-precious stone called lapis lazuli is displayed in an individual case among the minerals in Hall 34. Composed wholly of lapis lazuli, it is a rectangular block two feet long, fourteen inches wide, nine inches thick, and weighs 312 pounds. It was found in an Inca grave in Peru six or seven hundred miles from the nearest known deposit which is in the mountains behind Antofagasta, Chile. Compare the extra-



HUGE LAPIS LAZULI

This enormous block of a popular semi-precious stone weighs 312 pounds, or almost exactly three times as much as Mrs. Peggy McGann who is comparing her own lapis lazuli ring with it. It is exhibited in Hall 34.

ordinary size of this specimen with the statement of an eleventh century author: "It is oftentimes of so great a bigness that spoons and hafts of knives are made of it."

Lapis lazuli is an opaque semi-precious stone of a rich blue color not equalled in any other stone suited for ornamental use. It is often spangled with brilliant yellow specks of pyrite which the ancients believed to be gold. An apt description is that of Pliny: "It is like a serene sky adorned with stars." The richness of its color is not displayed at its best on this rough block, but is adequately shown on polished pieces in the gem collection in H. N. Higinbotham Hall (Hall 31).

The value and beauty of the stone depends upon its color—the more intense the blue the more valuable the stone. It is soft, as gem stones go—about the hardness of feldspar—and loses its polish when subjected to wear, becoming dull and lusterless. It is not a simple mineral but a mixture of several common minerals to which its opacity is due. Other components are one or both of two bright blue minerals, lazurite and haüynite, to which it owes its color. The blue minerals are silicates and sulphates of calcium, sodium, and aluminum with a small quantity of sodium sulphide.

In jewelers' terms the Museum's enormous block of lapis weighs 706,000 carats. If ordinary market prices applied to such huge specimens it would be worth about \$425,000, but practical economics reduces the actual value of such a stone to about \$10,000.

In the Occident lapis is not as highly esteemed as formerly, but it is still used for beads and a variety of small ornaments. In mediaeval and ancient times it was the most highly esteemed of all blue stones. Marbodus, in the eleventh century, wrote concerning it:

"Opaque of color which excludes the eye
"By Nature with superior honors graced,
"As gem of gems above all others placed."

- The Romans, Greeks and Hebrews called it sapphire, a name now given to an entirely different gem. In ancient times it was esteemed a sovereign remedy for numerous ills and believed to be a potent charm to avert many evils. An early Hindu legend ascribes the origin of lapis lazuli to the cry of a prince of demons in Ceylon—"From a cry of the giant son of Diti, resembling the roaring of the troubled ocean at the close of the Calpa sprung the variegated Vaiduryam (lapis lazuli), source of colors, of a bright and ravishing splendor." —H.W.N.

Visiting Hours Change March 1

Beginning March 1, spring visiting hours, 9 A.M. to 5 P.M., will replace the winter schedule of 9 to 4. The new hours will continue in effect until April 30, after which the Museum will be open from 9 A.M. to 6 P.M. until September 6 (Labor Day).

Mummified Animals

The bodies of animals, as well as human beings, were mummified by the ancient Egyptians. An exhibit of mummified birds, and another of mummies of other animals with the coffins provided for some of them, is included among the collections in the Hall of Egypt (Hall J). Animals were mummified in some cases because of religious significance due to their association with various deities; sometimes as food offerings for dead humans in whose graves they were placed; and sometimes animals which had been pets were mummified for sentimental reasons.

HAWAII, ALASKA, AND SOUTH AMERICA AMONG SATURDAY AFTERNOON LECTURE SUBJECTS

Motion pictures in natural colors will be featured with each of the eight lectures to be presented in the annual Spring Course for adults, which begins at Field Museum on March 6. Various phases of natural history will be covered in these lectures, and some of them—such as those about Hawaii, Alaska, and South America—will have timely interest due to their relation to current incidents in the war.

The lectures are to be given in the James Simpson Theatre of the Museum, and all will begin at 2:30 P.M. The demand for seats makes it necessary to restrict admission to adults; for children free motion pictures are given on Saturday mornings.

Following are the dates, subjects, and speakers for the adult programs:

March 6—A NATURALIST IN THE WEST.

Karl Maslowski.

Mr. Maslowski, who has won great plaudits on the several previous occasions when he appeared before Field Museum audiences, is bringing this season an entirely new and different color film made last summer in Texas and Wyoming. In it are many unusual "shots" of such elusive creatures as moose, red fox, big horn sheep, bears, coyotes, prairie dogs, various small mammals, and many birds. There are also very beautiful expanses of scenery dotted with remarkable wild mountain flowers.

March 13—CRUISE OF THE KINKAJOU.

Alfred M. Bailey.

A voyage along the west coast of Mexico is recorded in Mr. Bailey's color film made on a recent cruise. There are intimate views of the bird and mammal life of that coast and the various islands lying along it. Of particular interest are the notable colonies of strange sea birds, of sea lions, and sea elephants.

Mr. Bailey, formerly a member of the staff of the Department of Zoology at Field Museum who participated in various important expeditions for this institution, is now Director of the Colorado Museum of Natural History at Denver.

March 20—BEAVER POND PARADE.

Earl Hilfiker.

In order to obtain his rare views of the life of animals and birds, Mr. Hilfiker often resorts to camouflage methods similar to those employed in war. Thus, in localities where he has conducted his expeditions, the inhabitants have frequently been startled to see a tree stump get up and walk, or to observe a bunch of brush rowing across a lake. The results of such enterprise will be seen in the remarkable films which Mr. Hilfiker will present to illustrate his lecture at Field Museum. Few animals are so interesting as those which are the subject of study in his motion pictures—the beavers, noted for their work as "four-

footed engineers." Beavers have played a prominent part in the history and development of our country, and rank among the most interesting and useful of our animals. They built the first dams, ponds, canals and roadways on the North American continent, many centuries before Stone Age man learned to fell trees with crude stone axes.

March 27—HAWAIIAN PARADISE.

Julian Gromer.

With a subject so rhapsodic as Hawaii, it is singularly appropriate that Mr. Gromer should present his lecture and unusually beautiful color films with a background of romantic music keyed to the atmosphere and the native rhythms of the Paradise he describes. This introduction of music represents a distinct innovation in Field Museum lecture presentations. Mr. Gromer's films show all the colorful tropic flowers and trees, the volcanic mountains and their craters, the lithe and attractive native men and women interpreting their own fascinating dances, the Oriental temples, the rapid-fire native sports such as barefoot football, and the world famous Waikiki Beach of song and story.

Mr. Gromer lived in Hawaii for some years, and came away only a few days before the Japanese attack on Pearl Harbor.

April 3—ALASKA TODAY.

William L. Darden.

Alaska's air bases threaten Japan—and thus the military importance of our Alaskan territory grows with each day of the great conflict!

Some years ago Mr. Darden set forth on a trip to Alaska as a naturalist. Struck by its vastness, beauty, and resources, he stayed on—for eight years, in fact—and only recently returned with a complete color motion picture record of modern Alaska, filmed during the past few months.

A visit to quartz mines—the dredging of gold—the mighty lumber industry in its vast forests—these are sequences of Mr. Darden's record that will amaze his listeners. They will see the famed Matanuska Farm Colony, started as an experiment in 1935, and thus understand better what it portends for future colonization. They will also watch salmon spawn, and visit a salmon cannery. The wild life sequences include Alaska moose, deer, caribou, fox, beaver, and lesser animals, as well as giant Kodiak bears and beautiful white mountain sheep.

April 10—THE SIOUX INDIAN AT HOME.

Edward T. Camenisch.

Mr. Camenisch's lecture, and the natural color motion pictures which accompany it, reveal the life of the Sioux Indians in their native surroundings. The scenes and story depict the Sioux's life pattern consisting of his allegiance to old tribal customs, counterbalanced by his contact with our social and

educational system. As a prelude, the introduction shows the geology, verdure, birds and animals among which these Indians live, and portrays their philosophy and feeling of kinship with all nature. Sub-topics are the Sioux's early dependence upon the buffalo, their native artistic ability, family life, old-time methods of gathering fruits and vegetables, modern institutions, and contribution to the present war effort.

April 17—HAUNTS FOR THE HUNTED.

W. F. Kubichek.

Formerly an enthusiastic hunter himself, Mr. Kubichek laid aside his guns several years ago in favor of the camera.

"It's much more interesting," he declares, "the results are more lasting and, what's more, it takes a great deal more skill to stalk your prey with a camera than it does with a gun. To get intimate pictures of the 'home life' of birds requires the ability to outwit them—and outsit them—in their own habitats. In addition, I've found that the motion picture camera is the only medium to really learn the things we wildlife conservationists want, and need, to know about the habits of birds."

Although the pictures for the film he is showing were taken throughout the United States by Mr. Kubichek, the greater portion was made in North and South Dakota and in Montana. Altogether 41 species are shown—all in color—including the very rare whooping crane of which fewer than 80 now exist, and the almost equally rare trumpeter swan whose present number is about 222.

April 24—FABULOUS SOUTH AMERICA.

Sullivan C. Richardson.

Mr. Richardson's film is an over-all picture record of the high spots of the first trip by automobile ever made from Detroit to Cape Horn over some 15,000 miles of roadless jungle, desert, and mountain wilderness. The close-ups he presents of our "good neighbors" in various Latin American countries are of special interest at this time because of the importance of the relations between those nations and the United States due both to the present war and to future Pan American plans and hopes. The Pan American Highway Expedition was made by Mr. Richardson and two companions in 1940.

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats upon presentation of membership ticket to the Theatre attendant before 2:30 o'clock on the day of the lecture, or by writing to the Museum (or telephoning WABash 9410) for reservation. Seats will be held in the Member's name until 2:30 o'clock. All reserved seats not claimed by 2:30 P.M. will be made available to the general public.

"WHAT IS A BAT?"—NEW EXHIBIT TELLS PRINCIPAL FACTS ABOUT ODD FLYING MAMMALS

"What is a Bat?" is the subject of a new exhibit recently installed in the systematic series of mammals (Hall 15). By means of actual specimens and models of various species of bats found both locally in this area and in other parts of the world, the exhibit demonstrates the principal facts about these odd creatures. Supplementing

apparatus for avoiding objects—so sensitive that it would be almost a miracle if a bat did collide with a person, says Mr. Karl P. Schmidt, Chief Curator of Zoology. Recent research indicates that the remarkable ability of bats for avoiding obstacles may be due to supersonic sounds emitted from their mouths and reflected back to their ears when

Bats nourish their young with milk. All these features prove that bats are mammals. They are most closely related to the insect-eating shrews and moles. In spite of the mouse-like appearance of many bats, they are not related to mice.

SIZE OF BATS:

Nearly all the models in this exhibit are greatly enlarged because most bats are small mouse-sized creatures.

The huge fruit bats or "flying foxes" of southeastern Asia, Australia, and the South Sea Islands are the giants among bats. They may have a wing-spread of almost five feet, and weigh three pounds or more. At the other extreme, the tiny pipistrelles found over most of the United States may have a wing-spread of less than six inches, and seven together would scarcely weigh an ounce.

More than 1,000 kinds of bats are known, and most of these are about the size of the local silver-haired bats in the exhibit.

WINGS OF BATS:

Bats are the only mammals that truly fly ("flying squirrels" and similar mammals merely glide, and do not truly fly), but a bat's wing is very different from a bird's wing. In a bat the flight surface is composed of naked skin instead of feathers, and this skin is spread between the greatly elongated fingers of the bat's hand.

The thumb is always separate from the rest of the wing. It forms a little hook on the front edge of the wing that helps to pull the animal along when it crawls.

A few bats have a suction disk at the base of the thumb, which enables them to hang suspended on perfectly smooth surfaces such as banana leaves. Other bats have a pouch-like gland, thought to be a scent gland, in the skin of the wing.

HEADS OF BATS:

Many bats are equipped with strange growths on the face, or with exceptionally



THE VAMPIRE—LIFE SIZE

Sensational writers have long spread the false impression that the vampire bat is a giant creature of terrifying aspect and far more dangerous to human beings than it is. This illustration indicates the actual dimensions of an average sized bat of this blood-sucking species which is found only in tropical regions of Central and South America.

the specimens are enlarged models of parts of bats, showing structural characteristics and how they are adapted to specific functional purposes. To some extent the exhibit follows the plan of the earlier "What is a Bird?" exhibit installed in Hall 21 (FIELD MUSEUM NEWS, November, 1940, p. 1). Both seek to answer such questions (especially from children) as "Why?" and "How?" as well as "What?" Both are attempts to present and explain ideas, rather than merely to display examples.

In this manner the Museum is endeavoring to teach the public the truth about bats, which are widely misunderstood creatures. Men, or more especially women, have many false ideas about them, climaxed by the feminine fear that they will lodge in one's hair (which they never do purposely, although on negligibly rare occasions it could happen by accident). Also requiring "debunking" treatment are the wildly exaggerated stories about people being killed by vampire bats.

Women's fear of bats' getting in their hair is probably due to the erratic course bats take in flight, especially when confined within the walls of a room, and this erratic flight, in turn, is due to their exceptional

they come in proximity to objects—a phenomenon basically similar in principle to that employed in some types of submarine and airplane detectors. Many bats are really useful animals, says Mr. Schmidt, because their dietary habits help to reduce and control mosquitoes and midges.

The new exhibit was prepared by Staff Taxidermist Leon L. Walters. In the near future it will be the subject of a lecture by Miss Loraine Lloyd of the Raymond Foundation staff.

Each section of the exhibit is explained by a general label, and individual items by shorter labels. The scope of the exhibited material may be indicated, and the manner in which objectives are attained may be suggested, by incorporating into this article some of the general labels used, as follows: WHAT IS A BAT?

Bats are often supposed to be related to birds, because, like birds, they have wings and fly through the air. Several obvious features show that this is not true:

Bats have teeth.

Bats are covered with hair instead of feathers.

Bats bear their young alive; they never lay eggs.



VAMPIRE BAT'S SKULL

Enlarged model in new exhibit showing the tiger-like jaws and teeth which characterize this South American bat, and may account partly for exaggerated tales of its ferocity.



GROTESQUE FACE

This drawing shows, in enlarged size, the bizarre head of a horseshoe bat. Many species are equally impressive for extremely ugly features which belie their character.

large ears. When the head is enlarged, as in the models shown in this exhibit, these structures give the face an extraordinary grotesque appearance unlike that of any other mammal.

Such developments are found chiefly in bats that pursue flying insects, and probably help direct the flight of their owners. In some cases they are better developed in males, and then they may have a sexual significance.

THE MEANING OF BATS' TEETH:

Ancestral bats lived on insects, and had skulls and teeth suited to seizing and crushing such prey. Many modern bats have retained this habit, and their teeth have changed but little.

Other bats have adopted very different food habits. These enlarged models of the skulls of bats that live on various kinds of food show how the skull, and especially the teeth, are suited to each particular kind of food. A vampire bat would be unable to chew up an insect, but neither could an insect-eating bat make a satisfactory wound in an animal to lap its blood.

TAILS OF BATS:

The early ancestors of bats undoubtedly had long mouse-like tails that extended out behind the body as in other mammals. Tails much like this are still found in a few living bats, which are popularly known as "mouse-tailed bats."

In most bats there is a tail membrane stretched between the hind legs, and the tail bones act as a support for this membrane. Both the tail and its membrane have completely disappeared in some bats, while other related species exhibit various intermediate stages that show how the tail and membrane have gradually degenerated in the course of evolution.

A BAT'S SKELETON shows how the bones have been modified to enable these

creatures to fly. All the usual bones are represented, but many of them are so distorted that they look unlike the corresponding bones of other mammals.

Most striking is the skeleton of the wings. These look like grotesque, enormously enlarged hands—which is just what they are. The long and slender fingers serve as "ribs" to support the flight membrane.

The collar bone is large and powerful and there is a keel on the breast bone to provide attachment for the flight muscles.

VAMPIRE BATS are not the huge blood-sucking monsters that many people imagine. On the contrary, they are small inoffensive-appearing creatures apparently much like many other bats.

Vampires are found only in tropical parts of South and Central America, where they are very common. During the day they retire in colonies to rock caves or hollow trees, emerging at night to feed on the blood of mammals and birds.

Looking like a great spider, a vampire crawls about over its victim until it has found a suitable spot, then gouges out a little slice of skin with its teeth and laps up the blood that flows from the wound. This slight loss of blood usually does not inconvenience the victim.

FIREARMS IN THE FAR EAST

Examples of early firearms from Far Eastern countries are on exhibition in several halls of Field Museum's Department of Anthropology.

When the American Indians had the misfortune to be discovered by the Spaniards, the three principal means employed by the invaders to subdue them were the horse, firearms, and treachery. The Indians had neither horses nor firearms.

As the Museum exhibits above mentioned indicate, the story was different when the Spaniards and Portuguese set out to conquer parts of Asia. In 1571 the Spaniards entered the Bay of Manila and, to their surprise, were greeted by cannon fire from the citadels of two fortified towns. Antonia de Morga, a Spanish writer, relates that long before the arrival of the Spaniards, the Philippine Islanders had bronze culverins and cast iron pieces for defense. When the Portuguese took Malacca, in 1510, they captured 3,000 artillery pieces, 2,000 of which were bronze, the rest iron.

After the Spaniards settled in the Philippines, they sent spies to China to find out whether she could be conquered as easily as Mexico and Peru. These emissaries were Augustinian friars, whose reports are still extant. They returned and reported that it could not be done, because China was very populous, and had standing armies equipped with horses and firearms. This deterred the Spanish governors from any attempt to invade China, and it might be argued that it was the invention of gun-

powder that saved China from the fate of Mexico and Peru.

Firearms were employed in China, India, Java, Sumatra, Borneo, Siam, Cambodia, and Korea long before the arrival of any Europeans in Asia. Gunpowder was invented in China about the middle of the sixth century, and was first employed only in the manufacture of firecrackers and fireworks. Large guns were made there about the beginning of the twelfth century.

In the Museum's Hall of the Philippines (Hall H) are exhibited nine bronze cannon, so-called *lantaka*, captured by American forces from the Moros on Mindanao. Some of these are of Chinese manufacture, and are decorated with ancient Chinese designs; some were made by the Moros themselves in imitation of the Chinese models, and others were imported from Borneo.

In the Museum's Korean collection there are two copper cannons and one iron mortar. One cannon bears an inscription in Chinese characters which reveals that it was made for the imperial palace at Seoul in 1747. Its weight is 31 pounds.

In the Chinese collections (Hall 32) are two heavy muskets, called "jingals," actually used during the Boxer Rebellion of 1900, and captured by American soldiers. Their weights are 32 and 40 pounds respectively. The exhibit includes also iron and leaden cannon balls, and self-loading repeating crossbows with magazines that held ten or more arrows, discharged in rapid succession without reloading. The principle on which the arrow-chamber is constructed is almost identical with that of the magazine mechanism of modern rifles as first applied to the Winchester in 1867. In China this type of magazine was used many centuries ago. A series of matchlock guns made by the Tibetans may also be seen in Hall 32.

The Arabs learned the gunpowder formula—saltpeter, sulphur, and charcoal—from the Chinese. They exported saltpeter from China under the name "Chinese snow." After the conquest of Spain, the Arabs introduced there the secret of gunpowder and guns. From Spain this knowledge spread rapidly thereafter to all the other countries of Europe.

Nature's Bombs Exhibited

Have you seen the volcanic bombs in Clarence Buckingham Hall (Hall 35)? Violent explosions in volcanic craters threw fragments of lava, so hot that they were plastic like putty, high in the air. Their rapid whirling motion shaped the plastic masses into characteristic rounded and elongated forms which by the time they fell were stiffened enough by cooling to retain their shapes.

It is merely a coincidence that many of those exhibited come from France, Japan, and New Zealand where bombs of another kind have been falling recently.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Field Drive, Chicago

TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. T. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN

JOHN P. WILSON

OFFICERS

STANLEY FIELD	..... President
ALBERT A. SPRAGUE	..... First Vice-President
SILAS H. STRAWN	..... Second Vice-President
ALBERT B. DICK	..... Third Vice-President
*CLIFFORD C. GREGG	..... Director and Secretary
ORR GOODSON	..... Acting Director and Acting Secretary
SOLOMON A. SMITH	..... Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD.....Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN.....Chief Curator of Anthropology
B. E. DAHLGREN.....Chief Curator of Botany
HENRY W. NICHOLS.....Chief Curator of Geology
KARL P. SCHMIDT.....Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE.....Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

WISDOM FROM CHINA

Two Chinese proverbs, brought to attention by Dr. C. Martin Wilbur, Curator of Chinese Archaeology, and reproduced herewith in the original Chinese script, form appropriate commentaries for this page. The column on the right is translated: "A hundred hearings are not equal to one seeing," and thus sums up succinctly one of the primary reasons for the existence of a museum. The proverb on the left reads: "Laugh at a tear but don't laugh at a patch." It thus constitutes an editorial of the day for our whole country, or in fact the entire world, at this time when war makes necessary the philosophical acceptance of tragedy and tears, and when shortages and rationing make patches the badge of pride and patriotism, indicating that their wearer is doing his part to extend the usefulness of his possessions and to avoid waste.

GOOD IDEAS

Some time ago (November, 1940) these pages recorded the completion of an exhibit called "What is a Bird?" More recently (October, 1942) an exhibit devoted to the subject of animal reproduction was announced, and still later (December, 1942)

the first section of an entire hall to treat American archaeology and ethnology subjectively was described. In this issue, the Department of Geology has an account of an exhibit showing the processes by which fossils are preserved, and on another page "What is a Bat?" receives attention.

All these, and others which have had no special mention, illustrate the trend toward subjectivity in museum practice and technique. In the case of Field Museum they also point to the attainment of a certain degree of maturity without which they would not be possible. As a young institution starting with only the oddments handed down from a World's Fair, it was necessary for this Museum to devote its early years almost exclusively to the accumulation of objects, and to exhibit these as best it could. To use objects for illustrating subjects had limited possibilities because the number and scope of the objects possessed were seldom sufficient to cover more than a small part of any important subject. To a considerable extent this condition has now changed, although accumulation and acquisition must always go on, for the larger and richer collections are, the better they serve not only for research but also as a source of material for exhibits of ever widening significance. Also it seems unlikely that the subjective exhibit will supplant the objective to any serious extent. Both are needed, and each complements the other in the spirit of the old dictum that "a museum is a collection of labels illustrated by specimens."

The subjective exhibit is essentially didactic. It teaches by presenting ideas, facts, history, and theories rather than things, although it is relatively ineffective unless it does this through the use of things—real things rather than imitations. However, ideas are legion. They come from the mind of man, a variable and inexhaustible source. It is obvious, therefore, that limits must be placed and that the selection of good ideas is all important. A good idea for a Sunday supplement or even a World's Fair may not be a good one for a museum. Generally in a natural history museum it is necessary to stop short of man himself, except in his primitive condition. As soon as we begin to deal with civilized man and man-made things we enter a limitless field impossible to cover even by various specialized museums. Such institutions as have mistakenly made excursions into this field have done so only at the sacrifice of the proper development of their own subjects.

Many museums in the past have made feeble efforts at subjective exhibits but their success has been limited either because the ideas were not first-class or because the technique of preparation was only a borrowed one. Moreover, exhibits of this kind have seldom received the financial support necessary to results of the highest quality. A good subjective exhibit is not necessarily large and imposing, and its cost in time and

highly trained thought is not obvious. It has been relatively easy to secure support for large beautiful habitat groups, and, in the fifty years or more since they had their beginnings, a technique and a personnel have been developed for their production which now makes for practical perfection. Some of the skills thus acquired can be utilized in the subjective exhibit, but its full success will depend upon the development of specialized methods and personnel.

Not every curator is gifted with sufficient imagination to originate the best ideas, and on the other hand exact knowledge is the most effective curb upon tendencies to cheapness or sensationalism. Hence the prayer is not merely for ideas but for good ideas worked out co-operatively.

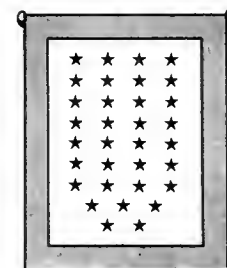
FIELD MUSEUM HONOR ROLL

Now in the Nation's Service

Army
THEODORE ROOSEVELT,
Trustee—Brig. Gen.
GEORGE A. RICHARDSON,
Trustee—Lt. Col.

CLIFFORD C. GREGG,
Director—Colonel, G.S.C.

DR. JOHN RINALDO,
Associate, Southwestern Archaeol.—Staff Sgt.
DR. SHARAT K. ROY, Curator, Geol.—Capt.
D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Pvt.
EMMET R. BLAKE, Asst. Curator, Birds—Corp.
RUPERT L. WENZEL, Asst. Curator, Insecta—Capt.
WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.
HENRY HORBACK, Asst., Geol.—Pvt.
JAMES C. MCINTYRE, Guard—2nd Lt.
RAYMOND J. CONNORS, Guard—Pvt.
FRANK J. DUTKOVIC, Janitor—Pvt.



Navy

LESTER ARMOUR, Trustee—Lieut. Commdr.
JOSEPH NASH FIELD, Trustee—Lieut. (S.G.)
COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut. (S.G.)
DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol. and Archaeol.—Ensign
JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics)
PATRICK T. MCENERY, Guard—Master-at-Arms
JOHN SYCKOWSKI, Guard—Ch. Commissary Steward
GEORGE JAHRAND, Guard—Ch. Water Tender
CLYDE JAMES NASH, Guard—Ch. Gunner's Mate
NICHOLAS REPAR, Printer—Aviation Machinist's Mate 3C.
MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C.
HERBERT NELSON, Painter—Painter 1C.
ELIZABETH BEST, Guide—Lecturer—WAVES (Officers' Training)

Marine Corps

MELVIN A. TRAYLOR, JR. Associate, Birds—2nd Lt.

Coast Guard

M. C. DARNALL, JR., Guard—Seaman 2C.
JOHN MCGINNIS, Guard—Ch. Boatswain's Mate

Other Services

BERT E. GROVE, Guide-Lecturer—American Field Service (N. Africa)
RUOYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services
BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army
LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U.S. Government

MUSEUM LECTURER JOINS WAVES

Miss Elizabeth Best, Guide-Lecturer on the staff of the Raymond Foundation, has been granted leave of absence for enlistment in the Navy. She has been accepted for the WAVES Officers' Training School at Northampton, Massachusetts, and left Chicago, February 12 for that post. The Museum has already lost 32 of its men to war service; Miss Best is the first woman member of its staff



ELIZABETH BEST

to join up. She has been associated with the Museum since early in 1940, when she joined the staff as a volunteer assistant in zoology. In February, 1941, she was appointed a staff lecturer. She is a graduate of Mount Holyoke College with a bachelor of science degree, and took her master of science degree at the University of Chicago.

Other Staff Notes

The Army has promoted Mr. Rupert L. Wenzel (on leave from his post at Field Museum as Assistant Curator of Insects) from the rank of First Lieutenant to Captain.

Mrs. Ellen T. Smith, Associate in the Division of Birds, who for several months was absent due to the fact that her husband, Mr. Hermon Dunlap Smith, was engaged in war activities in another city, has returned to Chicago. She is now again contributing her highly appreciated services to the Museum.

Mr. Alfred C. Weed, after two months' leave of absence spent in the southeast, returned to the Museum recently.

Dr. Alfred E. Emerson, a professor in the Department of Zoology at the University of Chicago, Dr. Charles H. Seevers, head of the Department of Zoology at the Central Y.M.C.A. College in Chicago, and Mr. Alex K. Wyatt, a specialist in moths and butterflies, have all been appointed to the staff of Field Museum as Research Associates in Entomology. They will aid in various research projects.

Mrs. Roberta Cramer has been appointed a staff lecturer in the James Nelson and Anna Louise Raymond Foundation. Mrs. Cramer was graduated from Grinnell College in Iowa with a bachelor of arts degree. She specialized in archaeology, and engaged in

further studies in anthropology and ethnology at the University of Toronto, later serving in research in these subjects at the Royal Ontario Museum of Archaeology in Toronto.

Mr. J. Francis Machride is spending some months at the Department of Botany, University of California, Los Angeles.

CONSERVATION BRIEFS

II. Mammals

BY COLIN CAMPBELL SANBORN
CURATOR OF MAMMALS

(Now a Lieutenant S. G. in U. S. Navy)

A conservationist trying to explain the aesthetic value of mammals or birds is often confronted by someone who asks: "What good are they?"

People who ask that question should ask themselves, "What good am I?" A little reflection on the answer to the second question might make them more tolerant of other life.

The motive for true conservation is higher than the mere gain of worldly possessions—it cannot be placed on a purely material basis. It recognizes the right to live—even the right of weasels, skunks, foxes and other small carnivores. True conservation is not the policy of saving that which seems at the time to be of most value to material civilizations, but is a policy of noninterference with all life, no matter how small.

Many living forms have a proper and rightful place in the perfect functioning of the laws of nature, and are required to complete the comprehensive outdoors picture. To remove even the smallest of these forms may destroy the balance and leave a blank in the natural picture.

To satisfy material needs, civilization has for years defaced the picture. Fortunately, however, the real value and beauty of the outdoors is at last being realized and efforts either to preserve or to restore natural surroundings are now being made. Concurrently has come understanding of the aesthetic value of some of the birds and of the diurnal mammals that attract the attention and catch the imagination. These are now protected by moral and written laws.

However, many nocturnal mammals, principally the small carnivores, have not as yet gained general approval for their existence and are thought of as enemies of material civilization when in many cases the exact opposite is true. Given sympathetic protection, these mammals could become almost as well known and friendly as many of the diurnal forms that captivate the hearts of their friends.

People guard well their money, jewelry, and other valuable possessions. If left unguarded they are apt to be stolen and the

owner is blamed for his carelessness. On the other hand, if poultry or livestock suffers from the attacks of wild animals it is always upon the wild animals that the blame is fixed, and not upon the owner who was lax in the care of his property.

This is illogical, and most certainly is not fair either to the poultry or the wild animals. Human beings know that it is wrong to rob and to kill, but certain mammals have no other means of existence and cannot distinguish between poultry and wild birds. Furthermore, domestication has removed many of the protective instincts of once wild animals and it is the owners' accepted responsibility to care for all of such domesticated creatures.

Even skunks, to say nothing of weasels, minks, raccoons, and foxes, have their proper place as checks on rodent and insect life which, if uncontrolled, would soon become a plague.

(Next issue:—*Conservation of Birds.*)

Artificial Silk Anticipated in 1664

Mr. Charles R. Heath, a Member of Field Museum who often contributes plant material to the Department of Botany, supplies the following interesting extract from an article on textile fibers in an Australian journal (written by Professor W. R. Lang of Geelong, Victoria):

"In 1664, Dr. Robert Hooke in his *Micrographia* made the following curious statement after examining silk fibers: 'Silk is little else than a dried thread of glew (*sic*). I have often thought that probably there might be a way found out to make an artificial glutinous composition much resembling if not full as good, nay better than, that excrement or whatever the substance it be out of which the silkworm draws his glew. I need not mention the use of such an invention, nor the benefit that is likely to accrue to the finder. they being sufficiently obvious. This hint, therefore, may, I hope, give some ingenious person an occasion for making some trials.'

"No such ingenious person arose until 1884, two hundred and twenty years later, when the Frenchman Chardonnet, using the ideas then recently introduced by the Englishman Swan for producing fine carbon filaments for his new electric globes, turned to the deadly explosive nitrocellulose, and the fantastic combination yielded the first artificial fibre from cellulose material."

The dating of many of the American Indian exhibits in Field Museum is based upon the tree-ring method of establishing chronology. In Hall 7 is an exhibit of a master tree-ring calendar illustrating how this method is used.

A Bean Dance altar of colored sand, made by Indians of the Southwest, is exhibited in Hall 7, Case 6.

"WHO'S WHO" AMONG ANIMALS SUBJECT OF SUNDAY TALKS

Audiences at the Sunday afternoon lectures to be presented during March by Mr. Paul G. Dallwig, the Layman Lecturer, will attend the court of the King of Beasts and all the lesser lights of the animal world. "Who's Who in the Mounted Zoo" is the topic of the lecture to be given each Sunday this month.

Especial attention will be given by Mr. Dallwig to such features as the complete story of the giant panda "Su-Lin," former pet of the Brookfield Zoo; the history of the two "man-eating lions of Tsavo" which devoured more than 130 human beings before they were finally shot by Colonel J. H. Patterson and brought to this Museum; and interesting observed incidents in the life of wild animals which illustrate their intelligence and their behavior under both normal and abnormal conditions. Mr. Dallwig will also dramatize "A Day in Africa," and will explain the modern art of taxidermy as practised in this and other leading museums. The lecture will be illustrated by exhibits in the halls of the Department of Zoology.

It is necessary to limit the size of groups attending these lectures, and persons wishing to participate must make reservations in advance. The lectures begin promptly at 2 P.M. Because of the heavy public demands, it is necessary to restrict accommodations to adults. Applications for reservations may be made by mail or telephone (WABash 9410).

In April, the final month of Mr. Dallwig's current season, his subject will be "Romance of Diamonds from Mine to Man."

PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN MARCH

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays, and certain holidays.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these follows:

Wednesday, March 3—Food Plants of America (Miss Marie Pabst).

Friday, March 5—The Races of Man (Miss Miriam Wood).

Wednesday, March 10—Before the Dawn of History (Miss Marie Pabst).

Friday, March 12—Bird Life in the Chicago Region (Miss Loraine Lloyd).

Wednesday, March 17—Snake Stories (Miss Miriam Wood).

Friday, March 19—Spring and Its Effects on Plants and Animals (Miss Loraine Lloyd).

Wednesday, March 24—Gems and Jewelry (Miss Marie Pabst).

Friday, March 26—Indian America (Miss Miriam Wood).

Wednesday, March 31—Plants and the War Effort (Miss Marie Pabst).

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

MOTION PICTURES FOR CHILDREN BEGIN DURING MARCH

India, Africa, Alaska, American Indians, and undersea life are among the subjects to be featured in the spring series of free motion picture programs for children to be presented at Field Museum on Saturday mornings during March and April by the James Nelson and Anna Louise Raymond Foundation. One program, that on March 20, will include the personal appearance of Reginald and Gladys Laubin, noted researchers of Indian lore, who will tell legends and demonstrate many of the dances of the aborigines. Five of the eight programs will include animated cartoons as well as the more serious pictures. These programs, to which children from all parts of Chicago and suburbs are invited, will be presented twice each Saturday, at 10 A.M. and at 11, in the James Simpson Theatre of the Museum. No tickets are needed for admission. Children may come alone, accompanied by adults, or in groups from schools, community centers, etc.

The programs include motion pictures with sound, many in color. Following is the schedule:

March 6—A LOOK INTO INDIA.

Also a cartoon.

March 13—WHEELS ACROSS AFRICA.

March 20—INDIAN DANCES AND LORE.

March 27—SPRING CROSSES THE CONTINENT. Also a cartoon.

April 3—OUR NEIGHBORS DOWN THE ROAD.

Also a cartoon.

April 10—BY AIR TO ALASKA.

Also a cartoon.

April 17—LIFE ALONG THE SEA FLOOR.

Also a cartoon.

April 24—AN ALL-CARTOON PROGRAM.

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

Department of Anthropology:

From American Museum of Natural History, New York—60 prehistoric stone implements and potsherds, China.

Department of Botany:

From Mrs. M. Alice Cornman, Punta Gorda, Fla.—40 lichens, Panama; from Mrs. Cora S. Steyermark, Barrington, Ill.—90 herbarium specimens, Louisiana; from Dr. M. J. Groesbeck, Porterville, Calif.—85 herbarium specimens; from Dr. Henry

Field, Washington, D. C.—20 herbarium specimens, Tobago and Trinidad; from Otto Degener, New York—153 herbarium specimens, chiefly Hawaii; from William A. Daily, Indianapolis, Ind.—64 specimens of algae, Indiana; from José Ignacio Aguilar, Guatemala City, Guatemala—225 herbarium specimens, Guatemala; from Prof. Angel Maldonado, Lima, Peru—115 specimens of algae, western Peru.

Department of Geology:

From Emil Liljebblad, Villa Park, Ill.—2 specimens of fibrous gypsum, Illinois.

Department of Zoology:

From First Lt. Robert Traub, Louisiana, Mo.—8 fleas in 4 species, United States and Mexico; from Dr. Fritz Haas, Chicago, and John Q. Burch, Redondo Beach, Calif.—about 1,200 specimens of marine shells in 224 lots, west coast of United States and Mexico; from Leslie Hubricht, St. Louis, Mo.—190 specimens in 4 lots of fresh water crustacea and one lot of land shells, Illinois; from Hon. R. M. Barnes, Lacon, Ill.—5 specimens in 5 species of shells.

Library:

Valuable books from: Dr. B. P. Georges Hochreutiner, Geneva, Switzerland; from A. R. Penrose, Sydney, Australia; from Willing's Press Service, London, England; from Mrs. J. Howes, Holyoke, Mass.; from Ko Zen Kuang, Kunming, Yunnan, China; from Mons. Federico Lunardi, Tegucigalpa, Honduras; from Dr. Henry Field, Washington, D. C.; from Elmer S. Riggs, Lawrence, Kans.; from Stanley Field, Lake Forest, Ill.; from Col. Clifford C. Gregg, Camp Hood, Tex.; from Orr Goodson, Glencoe, Ill.; Clifford H. Pope, Winnetka, Ill.; and from H. Boardman Conover, Paul C. Standley, and Miss Vivian E. Capaul, all of Chicago.

NEW MEMBERS

The following persons became Members of Field Museum during the period from January 16 to February 15:

Associate Members

Miss Ruth E. Chinlund, Edward Vilas Platt, Mrs. Edward Summer, Arnold Spencer Wahl.

Annual Members

Carl E. Atwood, Dr. Emmet B. Gay, Stewart Boal, William C. Borngaber, Henry L. Burman, Sidney I. Cole, Thomas B. Freeman, Roy G. Geisler, Walter C. Hasselhorn, J. H. Herz, Harry W. Jarrow, Arthur Keating, Mrs. Howard Kroehl, Samuel A. Larsen, Albert F. Meyer, Ben Miller, Edgar B. Miller, Dr. Shayle Miller, J. D. Mollendorf, Mrs. Roscoe Moon, Raymond Mooney, Joseph L. Moss, Joseph B. Mulligan, Mrs. E. N. Ridley, R. Edward Stemm, Jr., Mrs. Charles E. Windeler.

The visitor interested in fishes should note how profound has been the effect of bottom-living habits in the flattened rays and skates, and in the sawfish, while free swimming habits, by contrast, develop the stream-lined torpedo-shaped body of the ocean going sharks (see Hall O exhibits).

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

APRIL-MAY, 1943

Nos. 4-5

“WAR THEATRES” EXHIBIT TO KEEP PACE WITH CURRENT FRONT PAGE NEWS

Museum Displays Material from Battle Areas for Information of Fighters and Their Families

By H. B. HARTE

MANAGING EDITOR, FIELD MUSEUM NEWS

“Theatres of the War,” a special exhibit of selected material representing phases of native life in various world zones where important war action is currently taking place, has just been installed in the west half of James Nelson and Anna Louise Raymond Hall (Hall 4—main floor).

This exhibit is designed primarily to teach members of our Armed Forces, on their visits to Field Museum (and thousands of them *do* visit this institution!) some of the principal facts about the customs of the peoples in the various geographic areas to which they may be dispatched. It will also function as an exhibit for ready reference by families and friends of men overseas who wish to learn something of the lands to which their soldiers, sailors, and marines have gone to fight our enemies.

The exhibit has been assembled in response to a widespread demand, on the part both of uniformed and civilian visitors, for information about the geography, ethnology, and natural history of the regions from which most of the newspapers' front page stories are emanating these days. It is planned to keep this hall current with the progress of war events. As new theatres of war become prominent in the news, or old ones drop out of the news due to regional victories, cases will be shifted so as to permit bringing in material representative of the new fields of interest.

The greatest emphasis is laid upon illustrating the customs of friendly so-called

“primitive” peoples who have chosen to become comrades of the forces of the United Nations, and who are rendering conspicuous services to our troops. It is well known that our forces have been most successful in those lands where the natives are friendly,

simply because they were contented to live more nearly natural lives than ours without the sometimes questionable benefits of our much vaunted mechanization and standardization of life. But these peoples have in many lands arisen nobly to play their part in the present world-shaking cataclysm.

They have shown the ability to distinguish between right and wrong. They have in many cases understood the real intents and purposes of the Axis nations, and recognized that with all our imperfections the hopes of the world hang upon the victory of our side. And they, for such reasons in some instances, and for reasons merely of their own innate humanitarianism in others, have volunteered to help us materially. In many places they are invaluable guides to our officers and men in penetrating difficult terrain such as jungle and desert. They have helped to carry the litters bearing our wounded. They have



PEACETIME SCENE IN NEW GUINEA

This photograph, made years ago by the Joseph N. Field Melanesian Expedition under the leadership of the late Dr. Albert B. Lewis of the Museum's Anthropology staff, shows types of natives, the kind of houses they built, and dugout canoe. Little known to Americans when Field Museum pioneered in its exploration (1909-13), this island is now familiar as one of the principal Pacific Ocean battle areas in which U. S. soldiers, sailors and marines are engaged.

and these friendships have brought many peoples to our side in varied forms of assistance. In many lands the members of tribes we were once disposed to look upon as “savages” have proved to have more actual “civilization” than certain other “modern” peoples we have regarded as belonging on our own level. These people seemed strange to us simply because they dressed differently (or dressed scarcely at all), had different customs, different religions (often neither more odd nor more superstition-based than some of the more peculiar sects which crop up as “freak religions” in Europe and America). Or

been important cogs in keeping open the lifelines of communication and supply, carrying food, munitions, and other necessities to our troops, by pack animals, on their own backs, in dugout canoes, and by other means. In some localities they have even been known to prepare caches of such fruits as coconuts, distributed at spots where any of our men happening along would find them for both food and liquid refreshment.

This being the case, it is important that our men going to overseas posts should know the true facts about these peoples, and be prepared to accept their hospitality on equally friendly terms, and to give them full



GANGES RIVER CARGO BOAT

Model, included in "Theatres of War" exhibit, of one of the many types of craft used in India. Similar vessels now probably aid transport of supplies to U. S. troops.

credit for the assistance rendered. If the Museum can teach these things to some of our boys, it will supplement the Army's and Navy's "indoctrination courses" just as surely and usefully as it is supplementing the school system by its various educational activities for children. Likewise, if it can also help in bringing a similar understanding and appreciation of these peoples by the families and friends of the fighting men, and all the other elements of our civilian population, it will be accomplishing a step toward the promotion of a post-war world attitude that should aid in bringing about the kind of peace we want and the removal of the causes of future wars.

The areas represented in the first assemblage of exhibits in this hall are: the Solomon Islands, New Guinea, the islands of the Bismarck Sea (Admiralty Island, New Britain, and New Ireland), North Africa, West Africa, India, northern Australia (Port Darwin area), and northern Alaska and the Aleutian Islands. Included in the display are weapons, ornaments, costumes, musical instruments, ceremonial objects, hollow log drums such as are used in "jungle telegraph," and other ethnological material illustrating how these people live, together with photographs of many of the men, women, and children themselves, employing some of these objects in their daily tasks. From this background material, the soldier, sailor, coastguardman, or marine bound for far fields of battle action may gain in advance some background and familiarity with the conditions he is going to meet, and the types of people who may by their co-operation assist him in important ways.

Space for this special exhibit has been made without seriously disturbing the Woodlands and Southeastern North American Indian exhibits which regularly occupy Hall 4. These exhibits all remain in the hall, but have been spaced a little more closely so that they may all be accommodated in the other end of the hall.

The special exhibit was arranged by Dr. Paul S. Martin, Chief Curator of Anthropology, assisted by Curators Donald Collier

and George I. Quimby. The keynote of the spirit in which the Museum administration and the members of the staff are presenting this special war exhibit was expressed by Mr. Collier on the day it was opened to the public, when he said:

"I confidently look forward most especially to two days—the day when we will add exhibits of the Philippines to this hall because our forces have retaken those islands and are well on their way to the shores of Japan itself—and the day when we will disperse all of these war exhibits to their



NEW GUINEA WAR VESSEL

Sailing canoe, with outrigger, of a type used by Papuan natives for many purposes. Some United Nations fliers, and other fighters adrift at sea, have been rescued by such craft. (Photo by Joseph N. Field Melanesian Expedition).

proper places in the systematic ethnological collections because the conflict has victoriously ended for the United Nations in all theatres of the war."

CONSERVATION BRIEFS

III. Birds

BY RUDYERD BOULTON
CURATOR OF BIRDS

(Now serving in Office of Strategic Services)

Chicago is unique among all the large cities of the United States for the great wealth of water birds and marsh birds that nest at its doors and even within its corporate area. But it is a question whether this condition is properly appreciated by the mass of Chicagoans, and whether they will provide the necessary measures for its continuance. The draining of our marshes has already lowered the water table in the Chicago region appreciably, and every agriculturist and gardener now pays the penalty.

It is only in the last 50 years that conservation has become a living issue of interest and concern to millions of Americans, and millions more still need to be educated in this subject. Widespread public attention first began to be focused upon the waste and destruction of our living natural resources during the last years of the 19th century. Effective at that time in crystal-

lizing public opinion were the efforts of the then newly founded National Association of Audubon Societies, the American Ornithologists' Union, and kindred bodies; and definite action for conservation was instituted under government auspices. Prior to that time there were no effective game laws, and no treaties affecting this problem with Canada or Mexico. Thousands upon thousands of birds were killed on their nesting grounds to obtain feathers for the millinery trade.

Today most states do have effective game laws. Treaties with our neighbors regulate the killing of migratory birds that nest in Canada and fly through the United States to winter in Mexico and farther south. Interstate commerce in game birds for food is prohibited. The killing of birds for their feathers and the sale of feathers of wild birds are prohibited.

Millions of people today take an active interest in clubs, societies, and other organizations primarily concerned with the study, enjoyment and preservation of the natural and bountiful heritage of our wild life. There is, however, much yet to be done to insure that the generations that come after us may see, experience, and enjoy from economic, scientific, and aesthetic standpoints the wild life that we still have. The pace of civilization gets faster and faster with the passing years. Airplanes, automobiles, radio, motion pictures—even telephone, telegraph, postal service, and newspapers—have been developed within a period that represents just a tick of the clock compared to the time required for the complicated adjustment of different types of animals not only to their environment but also to one another.

Conservation as a basic idea is universally agreed to. In the details of execution it is almost always controversial (no wonder the birds and animals have a hard time getting along with the human species, when the humans can't get along even with each other!). The controversies are due to the fact that groups of people with special interests see comparative values from different points of view. One of the greatest barriers to effective conservation measures is ignorance of basic facts. Even the most expert conservationist would hesitate to guarantee that *certain* results would follow specified practices.

(Next issue:—Conservation of Plant Life.)

Museum Hours Extended for Summer Period

Summer visiting hours, 9 A.M. to 6 P.M. daily, including Sundays and holidays, will go into effect at Field Museum on May 1, and continue throughout the period up to and including September 6 (Labor Day).

ECONOMIC IMPORTANCE OF BEANS APART FROM FOOD VALUE

BY J. FRANCIS MACBRIDE
ASSOCIATE CURATOR OF THE HERBARIUM

Boston baked, of course, are what almost any American thinks about first when beans are mentioned.

But it isn't the lowly bean, upon which armies since about the year 1500 have advanced, with which our economy is concerned today. The products that come from the legume family of plants, typified by the common bean, are of equal or greater importance. Many of these plants are scarcely recognizable as bean plants, even to a botanist, for they may have flowers that are not those of the familiar pea or bean, and fruits that have little resemblance to the ordinary bean or pea pod. The classic example of a bean plant that, in common parlance, "isn't one," is the peanut that matures its pods beneath the surface of the ground. Its blossoms, however, are characteristic bean or pea flowers—see the peanut plant exhibit in Case 36, Hall 25.

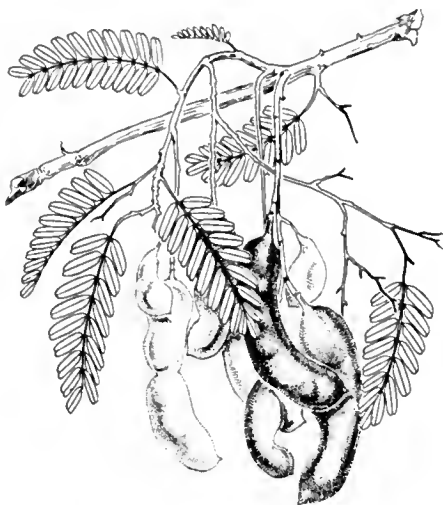
This example is easy to learn compared with some of the other "legumes" which are of economic interest. Gum Arabic, for instance, is the resin of an acacia, a spiny tree of northern Africa whose fruit is a pod, but whose flowers are almost minute and seem to consist mostly of stamens. The flowers are so closely crowded together in some sorts of acacias, and related mimosas, that they are fluffy in appearance and so ornamental that florists in the north and gardeners in Florida and California know them well in season. And there is cassia or senna with bright yellow or light pink flowers that are borne clustered in long loose sprays in one species often cultivated in warm regions for its beauty. The fruit is a pod, and furnishes a drug.

Among legumes with neither the flower nor the pod of the bean may be mentioned the "balsam of Peru," used pharmaceutically and in perfumery. Its fruit is something like that of a maple tree, but the winged portion of the stalked pod is below the solitary seed at the tip. In the seed portion are two pits filled with balsam. Curiously enough the tree, notwithstanding its name, was originally discovered in Central America and it is chiefly in Salvador that it is grown commercially, although it is also found in the forests of Peru. Other legumes unusual in fruit and flower include the "jutai" or dialium, a tree of Peru and the Amazon regions, valued for its hard wood resistant to moisture. Related is the courbaril that supplies copal, the resin exported from the Amazon.

TIMBER FROM BEAN PLANTS

The above gives an idea of the variation in flowers and fruits in this great family of plants, but we have mentioned only a few of the products that are important in the everyday life of men. These are as diverse as the plants themselves, and what diversity

there is! Blossoms so tiny that one can be picked up on the point of a pin—so large that one or two make a bouquet—sometimes with the lovely form of a butterfly or an orchid, sometimes like a fluff of down, sometimes almost like a wild rose! Often, too, the fragrance is unusual, exotic. There is, for example, the "cumaru," a huge Amazonian tree with crown, when in flower, bright rose-colored from its abundance of fragrant blossoms. Its egg-shaped fruits are often oily to the touch and exude an aromatic odor. The seed is the "tonka bean" exported for "coumarin," a common substitute for vanilla and a flavor for perhaps your own brand of cigarettes not to mention perfume or medicine. Similar in fragrance is a Peruvian tree, *amburana*, that attains a hundred feet, and is highly esteemed for its excellent wood. It is one of many



TAMARIND OF INDIA

Fruiting branch of a tree of the bean family, now grown everywhere in the tropics. The illustration is from a manual prepared by the Museum's Department of Botany at the request of the Surgeons-General of the Army and Navy, to provide Expeditionary Forces with information as to edible, and poisonous, plants.

tropical legumes that furnish timbers for all sorts of construction since they exist in a wide range of qualities. One of the best known is the purple heart.

But flowers, perfumes, even timbers and beans, important as these are, are not the outstanding products today of the legume family of plants—the most widely used "beans" today are a few rather allied and bean-like plants. These include the ancient soy bean, the usefulness of which has been greatly increased in our time. It looks like a bean plant and furnishes, under the impulse of modern industrial methods, an almost fantastic variety of things for man's needs ranging from food to oil and plastics (see case 30, Hall 25). Last year fifteen million bushels of soy beans were required for seed in the United States, whereas in 1917 a mere fifteen million pounds sufficed! Then there is *crotalaria*, long appreciated as a source of hemp known as "sunn," a fiber

produced from an Indian species, but recently of growing interest and importance as a soil builder because of its exceptional nitrogen fixing ability even in almost pure sand. Other bean or pea-like plants are proving to surpass by far the common clovers and alfalfa in usefulness for forage in many areas, especially on so-called marginal lands which, to a botanist, are simply lands for which adaptable crops have not been found. There are, for example, a species of "lotus" that yields like alfalfa; a lespedeza from Korea; and "kudzu," a trailing, tropical perennial bean—these are all legumes that have converted millions of unprofitable acres into profitable lands.

AN IMPORTANT INSECTICIDE

Finally, let us consider the sensational insecticide rotenone that is derived from a bean plant of the Amazon valley. This erect, bushy plant with pea-like flowers, called *derris* botanically, is perhaps, next to the erstwhile lowly bean, the most important bean of all—maybe even this statement is putting the cart before the horse, because of what avail is a bean plant if the insects eat it before the beans mature! Rotenone is one of the most potent insecticides and, although harmful to cold-blooded animals, it is harmless to the warm-blooded, including man. Although known from time immemorial to the natives as a "fish poison," its use in agriculture has come forward only during this decade. Actually the narcotic principle in the plant does not "poison" fish which have been trapped by damming a stream, but partially paralyzes them so that they are caught easily near the surface after pulverized *derris* plants, particularly the roots, have been strewn over the quiet water. In *derris*, rotenone is most plentiful in the roots which are thick and may extend for 75 feet or farther near the top of the ground. They are gathered from several wild species, some of which are now in cultivation and may yield as much as a ton of roots per acre after eighteen months. In 1940 the production was six and a half million pounds. The War Production Board has reported a two million pound shortage for 1942, the Army alone requiring an estimated 600,000 pounds.

SOME LEGUMES HARM LIVE STOCK

It is of interest that the same or other narcotics are found in a number of legumes. Sometimes these are harmful to animals as, for instance, the well-known loco weed of the western United States and the Andes which may be fatal to stock when grazed. The common "yopo tree" of Peru and the Amazon yields a narcotic bean that is apparently harmless; pulverized it is used by many native tribes as snuff.

All of which goes to suggest, among other things, that next time your friend tells you that you don't know beans, you may reply that there is still a great deal to be learned about legumes.

CONFUSIONS CONCERNING RACE, CULTURE, AND LANGUAGE

BY PAUL S. MARTIN

CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

There is more confusion and more smug, false, malicious, nonsensical thinking on the subjects of race, culture and language than on almost any other subject.

Fear is one of the prime factors in producing prejudices, jealousies, and hatreds. Fear of what? A fear that the My-Group (*my* friends, *my* labor union, *my* church, *my* club, *my* nation) may be criticized or dominated, oppressed, slandered, over-run or exterminated by the You-Group. This feeling is rooted in a very old human obsession—an obsession that the My-Group is the most important in the world—no, even more, that it is “uniquely valuable.” If the My-Group is weakened, ruined economically, or killed, its members feel that all important things, all valuable contributions, and all good ways of living will die out.

Let me illustrate. We, the Whites (the group I belong to and therefore My-Group), think of ourselves, of our accomplishments, and of our way of life as the most important and the best in the universe—in a word, “superior.” If another group such as an alien group, begins to drift into my community and to work for less wages, then the My-Group fears that our means of earning our daily bread will be threatened and usurped. This fear then turns into a hatred not just for these intruders but for any and all aliens. We cast about for rationalizations about this race which will justify our hatred. We say such things as “These people are inferior, they do not respect womanhood, they are careless drivers, they are dirty, they never pay their debts, they steal, they practice infanticide.” We do not wish to admit that the intruders may work more efficiently, and we do not recognize that they are used to a lower standard of living and can therefore afford to work for less. We simply condemn all members of this foreign group and have thus created a race prejudice. We feel compelled to do something about this threat to our economic life. Our fear, which has been translated into race prejudice, causes us not only to hate them, but also to legislate against them, to tar and feather them, to lynch them, and to run them out. In this illustration, an economic issue is confused with a racial issue, and out of this confusion arises much dissension and racial hatred.

Self-interest or fear that the My-Group will be weakened also causes distrust, hate,



A NEGRO TYPE
(West Africa)

jealousy, and competition between various groups in our own country, such as the farm bloc versus the silver bloc, the Democrats versus the Republicans, the Protestants versus the Catholics. But these conflicts are not expressed in racial terms.

This trait is common to so-called “civilized” man as well as to the “savages.” Our own immediate concerns, customs, language, and way of life are dear to us. We smile when we learn that a small “primitive” group of American Indians claims that it is responsible for all that is great and good in the world. But we might just as well smile at ourselves too.

WHAT IS RACE?

In order to understand these emotional reactions and to classify the issues involved, we must understand what race is.

It seems, after an examination of the zoological evidence, that all mankind belongs to a single genus and a single species. We know that all human divisions are inter-fertile and that different varieties of man have interbred since the earliest times with all other human groups, and that these inter-marriages have produced fertile offspring. Absolutely pure and unmixed races no longer exist. The various divisions of the human race do not arise as purely biological entities, but rather through an arbitrary and artificial classification. The racial problem is really a cultural, social and economic one, rather than a purely biological one.

Hooton defines race as “a major physical division of mankind, the constituent members of which are distinguished by the possession of similar combinations of anatomical features due to their common heredity.”

Strictly speaking, it may be argued that there is only one real *race*, i.e., the human race. For the sake of convenience, however, and on the basis of superficial differences, the human race has been broken up into three main divisions: i.e., White (Caucasian), Negroid, and East Asiatic (or Mongoloid). In addition to these there are subdivisions and composite groups.

In considering such traits as skin, hair or eye-color; shape of eye or nose; cephalic index; stature, or cranial capacity, great caution must be used. No one of them alone will distinguish any human type from another. If all these traits and many other anatomical features are carefully tabulated, it may be possible to classify a given individual as White, Negroid, or East Asiatic. The main point is that most of the peoples of the earth fall into definite



CAUCASIAN TYPE
(Georgia, USSR)

types; and it seems certain that the Whites, Negroids, and East Asiatics each represent a long history of physical specialization.

To sum up: (1) There is but one human race with three main stocks or sub-races or types. We may loosely speak of the Negroid race; but we really mean the Negroid division of the Human Race. (2) Many anatomical traits have to be taken into account before people can be classified as belonging to any particular stock.

Race and language are in no way related. This is obvious, for all who speak English are not of the White stock. A man's hereditary features and anatomy depend upon biological circumstances, or in other words upon his mother and father, his grandparents and so on. A man's *language* depends upon the speech he was taught when he was a child. A Chinese born in this country speaks English; yet he belongs to the East Asiatic or Mongoloid division of the human race. Language is *learned*, not transmitted biologically.

RACE AND CULTURE

Race and culture are distinct entities and are in no way related. Culture is not a function of race.

By “culture” I do not mean good manners. Culture embraces the sum total of human behavior and activities which are handed on by precept, imitation, and social heritage. This would include all customs, habits, attitudes, religious beliefs, political ideas, and ways of making and doing things.

Any civilization is built up and contributed to by many human sub-races or groups—White, Yellow and Black. Our own civilization rests upon a foundation of inventions and discoveries of all human groups. For example, gunpowder and movable type were invented by the Chinese people; domesticated animals and many grains come from Asiatic groups as well as from Mediterranean peoples; and corn and tobacco were first domesticated by the American Indians. Casting and smelting of iron may be attributed to the African Negro. In other words, civilization is built up now out of the contribution of this group, now of that group. We and our ancestors have been great borrowers.

IS THERE RACIAL SUPERIORITY?

This question interests every human group and is nearly always answered in the affirmative and in its own favor by the group asking the question!

Many people assume that the more one resembles an ape physically, the more one is like an ape in mental and social capabilities. But if this were true then we, the



MONGOLOID TYPE
(Alaskan Eskimo)

Whites, should have the mentality of apes because we are closer to them and less specialized than the Negro, for example. It may come as a surprise to some to learn that the tightly curled or kinky hair, the smooth hairless skin, and the thick lips of the Negro are highly specialized physical characteristics which are not shared by any apes. In other words, the Negro is less primitive and less like an ape in these respects than are the Whites.

In order to prove that our culture is superior to all others, we are wont to compare other civilizations with our own; and the more they differ from ours, the lower they are thought to be. This is illogical, immature, and provincial. There is really no good way for comparing cultures. We, like "primitive" peoples and "savages," think of our own concerns, our own way of life, as the best possible in the world. This smug attitude is similar to that of a man who, without any knowledge or fair appraisal of other communities, thinks that the railroad station or the park of his home town is the finest and best in the world. This sort of belief is a prejudice and should be recognized as such.

All civilizations are the end results of contributions and borrowings from all other peoples and civilizations. It is a common end achieved with the help of many.

In other words, any civilization which is isolated becomes stagnant; but a civilization which has numerous contacts and intermixtures with other cultures and peoples flourishes and becomes great.

WHY CULTURES VARY

Why do cultures differ? Why are some interested mainly in conquest, or in wealth, or in philosophy? Race, as we have seen, is not responsible; and instinct certainly is not. The answer is that man's mental plasticity is responsible for differing cultures. Man's adaptive ability is a greater asset to him than speed is to the deer, than flight is to the bird, or than streamlining is to the whale.

But all these things fade into insignificance when compared to the wide range of man's potentialities. Man is not inexorably governed by instincts as are other members of the animal world. Man is plastic, reacts quickly and completely to new situations and environments, and thus has an advantage over every other animal.

But perhaps you will still ask why cultures differ. Man's innate plasticity or adaptability is the answer to part of this question. The other portion may be answered by calling attention to the fact that man is a social animal and craves, and must have the approval of his fellow men. He struggles to attain this approval in forms and ways which his society or group recognizes and sanctions.

For example, if my own little social group, including family and circle of friends and acquaintances, stresses the importance of

earning large salaries and playing bridge well, then I bend all my efforts to be successful in these goals in order to be like others in my group and thus to win their approval. In this way, I am secure and happy and feel that I have "arrived."

And so it is with societies and nations and cultures. Aims, goals, interests, purposes, motives vary greatly from one culture to another; but whatever it is—be it conquest, herding, farming, wealth—each member of that society seeks to achieve that goal and to reap the consequent rewards and honors of his society.

It is well to remember that time and historical accidents unequally distribute the contacts which permit the exchange of ideas and the chances for a civilization to grow. Remember that as late as A.D. 900 our uncivilized ancestors in Britain were already two or three thousand years behind the Egyptians. But does that mean that our ancestors were duller and inferior to the Egyptians? Of course not. Time and contacts had not permitted them to share in the advances perfected in the Near East and Egyptian areas.

FOLKLORE OF THE DIAMOND

BY HENRY W. NICHOLS
CHIEF CURATOR, DEPARTMENT OF GEOLOGY

Many were the occult and mystic powers attributed to gems in ancient and medieval times, and many were the fantastic legends concerning them. These were not merely superstitions of the more ignorant populace, for they were recorded in good faith by the most eminent authors of their day such as Theophrastus, Pliny, and Boëtius. It is probably from vestiges of some of these ancient beliefs that we have acquired the pretty sentiments that add so much to our own pleasure in the possession of precious stones.

As the diamond is the most highly esteemed of precious stones it is natural that more superstitions and legends cluster about it than other gems. The most persistent and widely prevalent of these beliefs is that of its indestructibility. Pliny says that the diamond is so hard that if it is placed on an anvil and struck a violent blow with a hammer, the hammer and anvil will break but the diamond will not be injured. If, however, the diamond is first soaked in the fresh, warm blood of a ram, the diamond will be crushed to powder but the anvil will also break. The Chinese version has it that the diamond will break if struck with a ram's horn. This belief has persisted in some degree to modern times. Instances are known where valuable diamonds have been destroyed by being subjected to this test. The trouble is that, although the diamond is the hardest substance known, it is far from being the toughest, and actually it is readily broken by a moderate blow.

According to tradition, wearing a diamond assured many kinds of good fortune. Among other beliefs are the following: The diamond should be worn on the left side for there it has greater virtue than when worn on the right. It gives hardihood and manliness, and keeps limbs whole. It gives victory in plea and in war if the cause be just. It preserves from strife and riot, from evil swevens (dreams), and from sorrows and enchantments. If an enchanter seeks to bewitch a person who bears a diamond the virtue of the stone will cause all the evil to fall upon the enchanter. No beast dare attack a man that wears a diamond. Diamonds drive away leucures, incubi and succubi (evil spirits, male and female demons). Diamonds preserve virtue and detect infidelity. In the presence of poison they sweat and become moist. They cure lunacy and drive out evil spirits. In India it is believed that large stones bring the wearers back to their families. A diamond placed upon a lodestone neutralizes its magnetic properties so that it will not attract a compass needle. In Roman times the diamond was regarded as the kernel of gold, the purest and noblest part which has condensed to a transparent mass. A curious account of the origin of the diamond was given by Sir John Mandeville, traveler and story-teller of the 14th Century. He said that diamonds grow together, male and female. They are nourished by the dew of heaven. They bring forth small children and grow all the year. It is needless to say that in these more enlightened times no credence is given these legends and superstitions of a more credulous age.

In a Field Museum publication, *The Diamond, A Study in Chinese and Hellenistic Folk-Lore*, by the late Dr. Berthold Laufer, there are cited more of these curious legends and ancient beliefs of the powers of the diamond.

FIELD MUSEUM NEWS ON WAR SCHEDULE

This issue of FIELD MUSEUM NEWS, published as of April 15, constitutes both the April and May numbers (Vol. 14, Nos. 4-5). The next issue will combine the June, July, and August numbers, and will be published about June 1. The September and October numbers will appear as a single issue, scheduled for publication September 15. November and December will be published on normal schedule the first day of those months.

This reduction is due to the depletion of the Museum staff by the calling of many members into war service, with consequent necessarily curtailed activities in many directions, and to the necessity of conserving paper.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN

JOHN P. WILSON

OFFICERS

STANLEY FIELD	President
ALBERT A. SPRAGUE	First Vice-President
SILAS H. STRAWN	Second Vice-President
ALBERT B. DICK	Third Vice-President
*CLIFFORD C. GREGG	Director and Secretary
ORR GOODSON	Acting Director and Acting Secretary
SOLOMON A. SMITH	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN Chief Curator of Anthropology
B. E. DAHLGREN Chief Curator of Botany
HENRY W. NICHOLS Chief Curator of Geology
KARL P. SCHMIDT Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

MUSEUM IS STILL ACCESSIBLE

Even if your car is laid up, or you have to skimp on gas and save your tires, Field Museum is still easy to reach, and always worth a visit. Busses, street cars, "L," Illinois Central, Aurora-Elgin and North Shore Lines all provide close transportation.

MAN, THE UNKNOWN

In these days when everybody's efforts are directed towards helping to win the war, one may well ask "What role does anthropological research play?" It may seem a far cry from research to war, but actually it is not.

We are living in a very sick world. If civilization is to endure, we must push forward the study of Man. Therefore, anthropology, although a young science, is one of the most important to the world today. So much is known of the world outside of man, and so little is understood about man himself. Man has narrowed his world by communication and speed. But it is about his relationship to other men that he knows least—a fact which is partly responsible for our present world difficulties.

The general problem toward the solution of which anthropological investigations are directed is precisely to clarify man's social relationships. Anthropology aims to make contributions to the understanding and control of life. The workshops of the anthro-

pologist are the cultures of primitive peoples; the ancient towns and cities long since abandoned and buried by an accumulation of dirt and vegetation; the unwritten languages spoken by peoples all over the world; and the various races and sub-races and their inter-relationships. But from these workshops, anthropologists seek to derive some general knowledge of human ways, not to collect miscellaneous and curious information. The changes that go on in our complex culture are more easily understood in simpler primitive societies where there are fewer obscuring factors and intricate situations.

Raw data must be collected and studied in order to produce a significant synthesis of human history. Mere collecting of specimens and data is not enough; that is antiquarianism, not research, and is a sterile waste of time, effort and money.

It should be clear, then, that research is more vitally needed than ever. We must know more about that puzzling and frightening creature, Man—about his desires and contradictory impulses which, on the one hand, cause him to make progress and to strive upwards and, on the other hand, to pull down and to destroy by wars and conquest much of the good he has achieved. We must know also more about the world in which he lives and which influences him.

—P.S.M.

APRIL 24 LECTURE SUBJECT AND SPEAKER CHANGED

The Saturday afternoon lecture, "Fabulous South America," scheduled for April 24, has been canceled, due to the fact that the lecturer, Mr. Sullivan C. Richardson, has been summoned to carry out a special war mission for the Co-ordinator of Inter-American Affairs.

Mr. C. J. Albrecht, of Field Museum's taxidermy staff, will appear instead, presenting his lecture "Adventures on Land and Sea." Mr. Albrecht will show natural color motion picture films made during his most recent expeditionary experiences while collecting material and data for projected habitat groups. The pictures include scenes at sea while trailing whales and porpoises, intimate views of rare sea otters, travel on the Tamiami Trail in Florida, and across the Mojave Desert and Death Valley in California, mountains and canyons of Wyoming and adjacent states, and many scenes showing the lives of American game animals and of Indians.

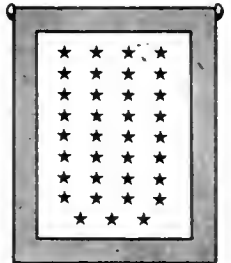
The lecture will begin at 2:30 P.M., and will be the closing event in the series presented each Saturday during March and April. No tickets are necessary for admission. A section of the James Simpson Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats upon presentation of membership ticket to the Theatre attendant

before 2:30 on the day of the lecture, or by writing to the Museum (or telephoning WABash 9410) for reservations. Seats will be held in the Member's name until 2:30 o'clock. All reserved seats unclaimed by that time will be made available to the general public.

It is probably not so well known that Edgar Allan Poe, the eminent writer of fiction and poetry, was interested in natural science and even wrote a book, by no means technically bad for its time, on his favorite subject, shells. The title of this publication, which appeared in Philadelphia in 1839, is *The Conchologist's First Book*.

FIELD MUSEUM HONOR ROLL

Now in the Nation's Service



Army

THEODORE ROOSEVELT, Trustee—Brig. Gen.

GEORGE A. RICHARDSON, Trustee—Lt. Col.

CLIFFORD C. GREGG, Director—Colonel, G.S.C.

DR. JOHN RINALDO, Associate, Southwestern Archaeol.—Staff Sgt.

DR. SHARAT K. ROY, Curator, Geol.—Capt.

D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Pvt.

EMMET R. BLAKE, Asst. Curator, Birds—Corp.

RUPERT L. WENZEL, Asst. Curator, Insects—Capt.

WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.

HENRY HORBACK, Asst., Geol.—Pvt.

JAMES C. MCINTYRE, Guard—2nd Lt.

RAYMOND J. CONNORS, Guard—Pvt.

FRANK J. DUTKOVIC, Janitor—Pvt.

Navy

LESTER ARMOUR, Trustee—Lieut. Comdr.

JOSEPH NASH FIELD, Trustee—Lieut. (S.G.)

COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut. (S.G.)

DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol.—Ensign

JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics)

PATRICK T. MCENERY, Guard—Master-at-Arms

JOHN SYCKOWSKI, Guard—Ch. Commissary Steward

GEORGE JAHRAND, Guard—Ch. Water Tender

CLYDE JAMES NASH, Guard—Ch. Gunner's Mate

NICHOLAS REPAR, Printer—Aviation Machinist's Mate 3C.

MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C.

HERBERT NELSON, Painter—Painter 1C.

ELIZABETH BEST, Guide—Lecturer—WAVES (Officers' Training)

Marine Corps

MELVIN A. TRAYLOR, Jr. Associate, Birds—2nd Lt.

Coast Guard

M. C. DARNALL, Jr., Guard—Ensign

JOHN MCGINNIS, Guard—Ch. Boatswain's Mate

Other Services

BERT E. GROVE, Guide-Lecturer—American Field Service (N. Africa)

RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services

BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army

LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U. S. Government

DR. JULIAN A. STEYERMARK, Asst. Curator, Herbarium—field work for Board of Economic Warfare

DR. C. MARTIN WILBUR, Curator, Chinese Archaeol. and Ethnol.—Staff of Office of Strategic Services

THINGS YOU MAY HAVE MISSED

African Fetish Figure

The nail-studded carved wooden fetish figure exhibited in one of the halls of African ethnology (Hall D), and shown in the accompanying illustration, represents the equivalent of "the war of nerves" as practiced by certain Negro tribes. Appearing somewhat like cartoonists' conceptions of "the little man who isn't there," it is actually a type of fetish used for fighting, at a distance, the man who isn't where his antagonist is. The Africans believe that by hammering a nail into such a figure they can induce, through sympathetic magic, an indirect injury upon an enemy without actual contact. If only such superstitions were really true, Generals Montgomery and Eisenhower might long ago easily have disposed of the wily Rommel and his Axis forces.



MURDER

by remote control. Africans believed nails driven into this figure could injure their enemies miles away.

This figure comes from the Maritime Congo District of Africa. It is a survival of witchcraft not too remote in principle from what was actually believed in by many of the best families of New England in the days of the Pilgrim fathers, as well as those of Old England.

The Congo tribesmen paid their medicine men to have nails driven into such figures. A nail in the heart of the wooden figure was expected to cause a similar mortal wound to a hated enemy miles away. If one did not wish to cause death, but merely pain, the nail could be driven in a less vital location on the body.

These figures are not idols, in the sense that they are believed to possess any power in themselves, says Dr. Wilfrid D. Hambly, Curator of African Ethnology—they are merely the abodes of certain spirits. The superior being is usually induced to take up his abode in the image through certain ceremonial performances conducted by the medicine men. There is a special spirit, and hence a fetish, for every important act. The larger images usually belong to villages or chiefs, the smaller to individuals.

Primitive Tooth Brushes

Primitive tooth brushes used by west African Negroes are shown in Hall D, Case 21. The "brushes" are short sticks,

light colored ones for women, dark for men. The ends of the sticks are chewed until they become fibrous, then they are used vigorously on the teeth.

Staff Notes

Dr. C. Martin Wilbur, Curator of Chinese Archaeology and Ethnology, has taken leave of absence from his duties at the Museum, to join the staff of the Office of Strategic Services at Washington, D. C. for the duration of the war.

Dr. Julian A. Steyermark, Assistant Curator of the Herbarium, has left on leave to perform a foreign mission for the Board of Economic Warfare of the United States Government. He will work in Central and South America on the important cinchona project, a prime strategic problem. Mr. Llewelyn Williams, Curator of Economic Botany, has undertaken a war-born government botanical project in Venezuela where he had previously conducted scientific expeditions.

Mr. M. C. Darnall, Jr., a Field Museum guard who enlisted in the Coast Guard several months ago as a seaman, has been commissioned an Ensign.

Dr. Sharat K. Roy, Curator of Geology, and Mr. Rupert L. Wenzel, Assistant Curator of Insects, both on leave of absence for some time past, and both commissioned as Captains in the U. S. Army, were visitors at Field Museum for several days last month while on furloughs from their military assignments. Mr. Bert E. Grove, lecturer on the staff of the Raymond Foundation, also was in for several days, having returned from Africa where he had been serving with the American Field Service. He is preparing for new duties in other foreign fields.

Mr. Gustaf Oscar Dalstrom has been appointed as an artist in the Department of Anthropology, to fill the vacancy caused by the resignation of Mrs. Alexander (Anne Harding) Spoehr. He will continue work, initiated by Mrs. Spoehr, of paintings and maps in striking colors for the extension of the new type of exhibits in Hall B (New World Archaeology). Mr. Dalstrom's past career has been as an independent artist. His work is represented in the permanent collection of the Museum of Modern Art in New York, and he has done many murals in public buildings.

Mr. H. B. Harte, Public Relations Counsel and Managing Editor of FIELD MUSEUM NEWS, has been appointed Managing Editor of *Scuttle Butt*, monthly magazine of the U. S. Coast Guard Auxiliary (including all Divisions and Flotillas in the Lake Michigan area of 9th Naval District). He

has been given a rating as Chief Yeoman (T) in the Coast Guard Reserve. The editorial work is in addition to duties aboard Captain of the Port vessels, Chicago District. As his enlistment is on a limited service basis, without pay, he retains active connection with the Museum.

Radio-shadowgraphs

In Hall 34 of the Department of Geology there is a group of minerals containing radium and thorium, exhibited with pictures, or more strictly speaking, shadowgraphs or silhouettes, taken by exposure to the radio-active emanations of the minerals without exposure to light. For each picture a photographic plate was wrapped in opaque paper and the radio-active mineral placed above it. Between mineral and plate a key or other small metallic object was placed. The radio emanations were intercepted by the metal objects, but passed freely through the opaque paper and affected the plates in the same way that light would affect them. After twenty-four hours the plates were developed and perfect silhouettes of the key or other objects appeared.

TIMBERS OF THE NEW WORLD

By Samuel J. Record and Robert W. Hess (Yale University).

"This large and comprehensive volume contains the latest, and most complete information available on all the known timbers of North, Central, and South America as well as the West Indian Islands," says Dr. B. E. Dahlgren, Chief Curator of Botany at Field Museum. "Professor Record, Dean of Yale University School of Forestry, and the world's leading authority on woods, has long been Research Associate in Wood Technology on the staff of Field Museum. The book represents the only encyclopedic treatment of the trees and timbers of the entire Western Hemisphere from the northernmost reaches of Canada's Arctic regions to the tip of Patagonia. More than 1,100 genera of 155 natural families are included. For purposes of comparison, there are also references to most of the commercial timbers of the Old World. The book contains more than 650 pages of encyclopedia format, with complete index, and includes eight original maps, 36 full-page halftones, and 75 photomicrographs illustrating the minute structure of woods."

Published by Yale University Press, this book, may be obtained through THE BOOK SHOP of Field Museum—price \$10 postpaid.

SUNDAY LECTURE SEASON ENDS APRIL 25

With his lectures each Sunday afternoon this month on "Romance of Diamonds from Mine to Man," Mr. Paul G. Dallwig, the Layman Lecturer, will close his current season on April 25. He has presented a different subject every month since October, except for a suspension during January.

In the April lectures, Mr. Dallwig tells the story of diamonds from the time of the original prospecting in South Africa through the development of the modern diamond mining and cutting industries. He relates the stories and legends surrounding the world's most famous diamonds, and also describes the uses of industrial diamonds in important war work. The lecture is illustrated with exhibits in H. N. Higinbotham Hall of Gems and Jewels and other halls of the Department of Geology.

Lectures begin promptly at 2 P.M. It is necessary to limit the size of groups attending them, and persons wishing to participate must make reservations in advance by mail or telephone (WABash 9410). Only adults can be accommodated.

Mr. Dallwig will resume his lectures on the first Sunday in October, which will mark the beginning of his seventh season. Subjects will be announced later in FIELD MUSEUM NEWS.

WEEKDAY LECTURE TOURS, APRIL 15—MAY 31

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays and certain holidays.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four Departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these for the period up to May 31 follows:

Friday April 16—The Earth's Face (Miss Marie Pabst).

Wednesday, April 21—Hats on Parade—special for Easter (Miss Loraine Lloyd).

Friday, April 23—Transportation Problems (Miss Miriam Wood).

Wednesday, April 28—Fashions, Fabrics and Furbelows (Mrs. Roberta Cramer).

Friday, April 30—New Drinks For Old (Miss Miriam Wood).

Wednesday, May 5—Vegetable Oils and Fats (Miss Marie Pabst).

Friday, May 7—Mothers and Mothers-in-Law (Mrs. Roberta Cramer).

Wednesday, May 12—The Carved Jades of China (Miss Miriam Wood).

Friday, May 14—New Guinea (Mrs. Roberta Cramer).

Wednesday, May 19—Animals in the Service of Man (Miss Loraine Lloyd).

Friday, May 21—People of the World Today (Miss Miriam Wood).

Wednesday, May 26—Spices and Preservatives (Miss Marie Pabst).

Friday, May 28—Transportation Problems of the Animal World (Miss Loraine Lloyd).

There will be no tour on Monday, May 31, because of the Memorial Day holiday.

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

ARE YOU MOVING? OR GOING SOMEWHERE?

Members of the Museum who have changed residences or plan to do so are urged to notify the Museum of their new addresses so that FIELD MUSEUM NEWS and other communications may reach them promptly. A post card for this purpose is enclosed with this issue.

Members going away during the summer, who desire Museum matter sent to their temporary addresses, may have this service by notifying the Museum.

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

Department of Anthropology:

From Dr. Louis Schapiro (deceased), formerly of Chicago—78 anthropological specimens, Panama, Nicaragua, Costa Rica, and Colombia; from Mrs. Edward A. Renwick, Evanston, Ill.—19 ethnological objects, northeastern Wisconsin.

Department of Botany:

From Hermann C. Benke, Chicago—57 herbarium specimens, Illinois and Indiana; from Lawrence J. King, Coshocton, Ohio—89 cryptogams, Illinois and Indiana; from Dr. Fred A. Barkley, Austin, Tex.—30 specimens of algae, Texas; from William A. Daily, Indianapolis, Ind.—37 specimens of algae, Indiana; from Instituto del Museo, Universidad Nacional de La Plata, La Plata, Argentina—100 photographs of type specimens of plants; from Dr. Samuel Eddy, Minneapolis, Minn.—65 specimens of plankton algae, Minnesota; from Otto Degener, New York—312 herbarium specimens, Hawaii.

Department of Geology:

From Miss Elisabeth Telling, Guilford, Conn.—a ring set with three zircons, Siam.

Department of Zoology:

From Lincoln Park Zoo, Chicago—an anaconda and a monitor lizard: from Chicago Zoological Society, Brookfield, Ill.—one American alligator, 4 mammals, and 2 snakes; from Mrs. Marion Grey, Evanston, Ill.—56 specimens of sea shells, Maryland coast; from Harold Trapido,

Paine Field, Wash.—3 salamanders, state of Washington.

Library:

Valuable books from American Museum of Natural History and George G. Goodwin, New York; from Mrs. J. Howes, Holyoke, Mass.; from Horace Groskin, Philadelphia, Pa.; from Charles Barney Cory, Homewood, Ill.; from Emil Liljeblad, Villa Park, Ill.; from Dr. Henry Field, Washington, D. C.; from Miss Helen W. Painter, Bloomington, Ind.; from Herbert Schoof, Raleigh, N. C.; and from Lillian W. Florsheim Memorial Library of Michael Reese Hospital, Stanley Field, Boardman Conover, Orr Goodson, William J. Gerhard, John R. Millar, Dr. Paul S. Martin, Paul C. Standley, Dr. C. Martin Wilbur, Karl P. Schmidt, and Dr. Charles SeEVERS, all of Chicago.

NEW MEMBERS

The following persons became Members of Field Museum during the period from February 16 to March 31:

Non-Resident Associate Members

S. R. Lindboe

Associate Members

John G. Allbright, E. M. Antrim, Miss Hertha Giffey, Walter C. James, Dr. Maclyn M. Kamins.

Annual Members

Mrs. William R. Alcorn, William H. Alexander, Charles P. Barker, George F. Barry, Andrew D. Berkey, Ralph C. Blaha, Mrs. Orville T. Bright, W. H. Bolton, Mrs. William C. Both, Mrs. William C. Boyden, Rev. Gordon E. Brant, Edward A. Briggs, Jr., L. J. Burke, Mrs. Oscar D. Carlstrom, Mrs. Broadus J. Clarke, Mrs. J. S. Clifford, William F. Crawford, Dr. Langston Crenshaw, H. F. DeLonghe, E. J. DeWitt, Earl B. Dickerson, Samuel A. Edelman, Benjamin J. Edelstone, Mrs. George J. Farnsworth, Albert J. Foute, José Santos Gollan, Hijo, Bryan Hartnett, Dr. C. Howard Hatcher, Dr. Francis W. Hetreed, Charles E. Hogan, F. C. Howard, Robert N. Howell, Neal S. Hulstein, Joseph M. Jacobs, Mrs. Doris Hurtig Johnson, John W. Jolly, William KixMiller, Walter S. McCloud, Miss Charlotte Miller, John S. Molan, Sidney Neuman, Mrs. Vaughn R. Nishkian, Dr. James A. Northcross, Dr. Harry A. Oberhelman, Holland C. Pile, Morton S. Prescott, Hugh Robertson, Max Rukin, Harold S. Russell, Joseph M. Schnur, William M. Ward.

Technical Publications Issued

The following technical publications have recently been issued by Field Museum Press:

Anthropological Series, Vol. 32, No. 1. *The SU Site. Excavations at a Mogollon Village, western New Mexico.* Second Season, 1941. By Paul S. Martin. Feb. 24, 1943. 174 pages, 49 halftones, 12 maps. \$2.

Zoological Series, Vol. 28, No. 1. *The Carotid Circulation in the Domestic Cat.* By D. Dwight Davis and H. Elizabeth Story. Mar. 25, 1943. 48 pages, 9 text figures. 50c.

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

JUNE-JULY-AUGUST, 1943

Nos. 6-7-8

AFRICANS STILL USE ANCIENT METHODS FOR EXTRACTING OIL FROM OLIVES

BY WILFRID DYSON HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

Thousands of American troops in Africa must by now have become familiar with primitive methods, employed by the natives with whom they come into contact, for doing things which the modern world accomplishes by means of highly mechanized processes. One of the native industries probably coming within the scope of their observation is that of extracting the oil from olives. The modern American and European method, of course, is to use some form of hydraulic pressure, but the Africans have also shown considerable ingenuity in developing reasonably efficient machines of their own, some types of which have been employed in the Mediterranean valley for perhaps 2,000 years or longer.

One of the many attractive murals by the well-known Chicago artist, Julius Moessel, in the Department of Botany's Hall of Food Plants (Hall 25), shows an ancient olive press. The painting is a reconstruction based upon the results of archaeological research in connection with ancient worked stones which for a long time were a puzzling mystery following their discovery in Africa. The picture shows two women in a crouching position rolling what appears to be a heavy log, but in reality is a piece of an old stone column, over a heap of olives. In the background is a massive stone press which can be forced downward by means of a large log—the trunk of a date palm—used as a lever and probably very effectively.

This painting is explained by Dr. B. E. Dahlgren, Chief Curator of Botany, in Field Museum Botanical Leaflet No. 25, *The Story of Food Plants*, as follows:

“The oil of the olive has been well known since ancient times and is so generally esteemed above all other edible oils that its source and preparation are of special interest. On the north coast of Africa and among the Aegean Islands there exist certain curious and symmetrically placed stones that long defied interpretation. Recently

origin of cultivation, we do know that a spray of wild olives was worn by the victor in the early Greek games, and that in early Greek and Roman times olive oil was used as food. Preserved olives have been found among buried stores in the city of Pompeii which was destroyed by an eruption of Mount Vesuvius occurring in the year A.D. 79.

The trees shown in Field Museum's mural are no doubt of considerable age, for they grow very slowly and seldom exceed thirty feet in height. Botanical literature contains a reference to a tree having a girth of more than 23 feet at an age estimated to be 700 years. The olive belongs to a large family of plants known as *Oleaceae*, and the genus *Olea* includes about 35 species which are widely scattered over the Mediterranean basin. The olive is also cultivated in Australia, South Africa, and California. The wild olive is a small tree or bush of rather straggling growth which produces hard, closely



A PRIMITIVE OLIVE PRESS, NORTHERN AFRICA

One of a series of murals by Julius Moessel, in the Hall of Food Plants (Hall 25).

The mechanics of this ancient method of extracting olive oil is explained in the accompanying article.

these were proved beyond doubt to be remains of olive presses of an ancient and primitive type. Olives, first crushed or bruised by a roller, as is done even today, were put in bags and subjected to pressure, obtained in these ancient presses by a stone weight suspended at the end of a lever. A rope and pulley arrangement raised and lowered the weight.”

The first cultivation of the olive is unknown, but wild forms of the plant are still plentiful in the Mediterranean area, and opinion on the whole seems to point to Syria, at the eastern end of the Mediterranean, as a likely home for early cultivation of the plant as well as for primitive methods of pressing out the oil. Although no definite period can be assigned to the

grained timber of a kind often employed as an ornamental wood by cabinet makers.

Fruits of the species vary in color and differ somewhat in shape, but most of them are egg-shaped or oval. The liquid which is expressed from the fleshy part of the fruit contains from 20 to 60 per cent of oil. When treated commercially the pulp is pressed twice, thus yielding first and second grades of oil. The remaining pulp is then mixed with hot water and subjected to further pressure which brings out a substance that is made into technical oils. In addition to value as a food substance, olive oil is used in preserving sardines, and in manufacturing soaps of high grade.

Although the methods shown in illustrations from North Africa are primitive, the

total output of olive oil from that region is considerable. For example, rather more than 16,000,000 gallons were exported from Tunisia in 1937, and in the same year nearly 5,000,000 gallons were exported from Algeria. These countries produce an enormous surplus of olive oil over and above what is required by the people in their domestic cooking.

In some parts of Algeria a system of bruising the olives in a circular trough is employed, and pressure is applied by means of a heavy stone moved by a mule. The animal walks around and around the trough, and in so doing pivots a revolving wooden post. The bruised olives are placed in baskets beneath a heavy tree trunk, one edge of which rests upon a ledge in the wall of the house while a heavy stone attached to the other end lends additional weight to the trunk. In this way the tree trunk is made to press hard upon the baskets underneath, and the oil exudes from the olives. This appears to be akin to the method shown in Mr. Moessel's mural painting, except that the end of the pressure beam is thrust into the wall of a house instead of into the base of a tree trunk as shown in the picture.

The methods of applying mechanical pressure are too numerous to detail, but one illustration in particular shows how human ingenuity can reduce hard work. Two men sit on their haunches, each with his back against a wall. Between them is a large cylindrical stone which they push in a leisurely manner to and fro with their feet across a quantity of olives.

All of these methods are presumably very ancient, and the employment of improved technique has no doubt acquired a long history. In the oasis of Siwa a very ingenious device for pressing olives includes the use of an enormous wooden screw. It is true that the people of Siwa use the rolling stone which is pushed around by manual labor and not by a mule as previously noted. But the Arabs of Siwa in Libya have in addition to this crude method a more elaborate device which consists of two upright posts and a crossbeam. Directly under this crossbeam, and resting on the ground, is a flat stone on which the olives are piled. On top of the olives are two flat stones. The huge wooden screw, which is twisted by a hand-lever, can be turned downward with an ever-increasing pressure on the olives which are sandwiched between the stones. An old manuscript recording the use of this press is dated about 850 of the Mohammedan calendar. That would be about A.D. 1446, but no doubt the apparatus was in use long before that time. The use of the screw is, however, a definite advance from the older primitive methods.

It seems to be the irony of fate that warfare should be waged among olive groves, whose twigs have been symbols of peace at

least since early biblical history. So it was in Gallipoli in 1914 as the writer well remembers, and even a diminutive olive tree was a welcome shelter from the sun and a screen against enemy snipers. In North Africa some of the olive trees will be blasted with bombs and gun fire, but doubtless many will remain to continue their mission of symbolizing peace and contributing to material prosperity.

PLANTS OF OLDEN DAYS BLOOM IN BOMB CRATERS OF EUROPE

BY PAUL C. STANDLEY
CURATOR OF THE HERBARIUM

During the first World War there were reports of strange plants found along the Western Front in ground pitted with shell craters. Botanists visited the front to investigate the plants that sprang up where the soil was ravaged by exploding shells, and several papers recorded the results of their explorations. In such places there grew in abundance dozens of plants previously quite unknown in the vicinity or else very rare. The presumption was that their seeds had lain for generations deep in the ground, to germinate only when they were exposed to the air.

In 1943 similar stories are coming out of England, and we may hope that this spring Berlin botanists may find even more of the same nature to occupy their attention. It is stated that in the bomb craters of London there were found during the past season almost 100 plants no one had seen in these places for a century. Of the London plants the most celebrated is the London rocket (significantly named!), a kind of mustard that is said to have made a luxuriant growth after the great fire of 1666, and is no less plentiful today.

It is well known that seeds of some kinds of plants, if lodged deep in the ground or otherwise protected, maintain their power of germination for many years, although not for as long as the 2,000 years after which wheat of Egyptian tombs is falsely claimed to have sprouted.

Here in the United States it is sometimes possible to observe the growth of seed buried for many years. After a fire sweeps a forest area, plants of kinds previously unknown there often appear. Usually they are plants whose seeds, like those of dandelion, are carried by wind, and probably deposited in the ground after the fire. In the mountains of western North Carolina, after the magnificent balsam forests are cut, there spring up immediately thickets of choke-cherry, whose seeds undoubtedly are distributed by birds. The thickets of new bushes are so extensive that one cannot believe they are the product of a single season. Instead, there is every reason to assume that the cherry pits lie in the ground for years until the brush fires that accompany the cutting of the forest provide a

favorable occasion for their germination. Then, after years of suspended existence, they all at once begin to grow, like the mustards and poppies of the bomb craters of Britain and Hitlerland.

NEW "BACKGROUNDS OF WAR" SERIES OF PROGRAMS

A second, and much more elaborate series of programs on the subject "Backgrounds of the War" will be presented at Field Museum throughout July and August. The first series, offered last summer, attracted much attention.

The programs will be given in the Lecture Hall each Thursday afternoon at 2:30 o'clock. In some cases motion pictures will be the principal item; others will consist of lectures illustrated with still or motion pictures, or both. Following the programs, members of the audiences will be directed to permanent Museum exhibits correlating the lectures and films. Admission is free, both to these programs, and to the Museum itself on Thursdays.

Following are the dates and the details of the programs to be given on each:

- July 1**—THE 400,000,000 (*a historical record of the background of events in China*). Motion pictures.
- July 8**—CLOUDS AND WEATHER (*an informal discussion illustrated with still and motion pictures*). Lecture by Miss Miriam Wood.
- July 15**—THE SOLOMON ISLANDS (*presenting a general idea of that war area, in selected still pictures*). Lecture by Mrs. Roberta Cramer.
- July 22**—BURMA ROAD (*scenes in color along the famous highway from Kunming to Lashio*). Motion pictures.
- July 29**—NEW GUINEA (*a general discussion of the people and customs, and the plants and animals of New Guinea*). Lecture by Mrs. Roberta Cramer.
- August 5**—ENGLAND AT WORK (*wartime and peacetime industries of the British Isles*). Motion pictures.
- August 12**—FUN IN FOODS (*some of the foods of the lesser known nations among our allies*). Lecture by Miss Miriam Wood.
- August 19**—FIVE FACES (*the five races who make up the population of Malaya*). Motion pictures.
- August 26**—FLIGHT—IN THE ANIMAL WORLD (*the story of natural flight, and its bearing upon our aviation techniques*). Lecture by Miss Loraine Lloyd. Illustrated with still and motion pictures.

Fallen American civilizations, such as those of the Mayas, Aztecs, and Toltecs, are well represented by the archaeological exhibits in the Hall of Mexico and Central America (Hall 8).

VARIED LUPINES NOW BLOOMING IN GARDENS AND WILDS

By J. FRANCIS MACBRIDE
ASSOCIATE CURATOR OF THE HERBARIUM

If any reader of *FIELD MUSEUM NEWS* doesn't know the common wild lupine or "sun-dial" that often covers rods of sandy or loose soils to form blotches of blue color in late May or early June he may acquaint himself with it easily by turning to page 16 of the Museum's Botany Leaflet No. 8. There this wild flower of the Chicago region—not infrequent in gardens—is illustrated. The chances are, however, that one would scarcely recognize as lupines some of the species that grow not far below the crests of the Andes in Peru. Elevations around 15,000 feet seem amazing for any flowering plant to attain until one remembers that in Peru the proximity of the equator results in a much higher temperature at greater altitudes than is the case in the temperate zones.

Even so, the lupines of the high *puna*, as a wet turf-like terrain in the Andes is sometimes called, are depressed little shrubs forming mats from which the stalks of the well-known pea-like flowers raise themselves scarcely an inch, or at most a few inches, and then rarely erectly. Much more characteristic, and among the most beautiful species, are those of alpine basins or meadows at slightly lower elevations, but unlike the common or garden varieties they grow in scattered clumps, one plant sometimes as big around as a tub, the thick flowering stems arising directly from among many long-stalked leaves, closely clustered on the crown of the perennial root. The spikes of flowers of lupines of this type are often raised a foot or two above the leaves and may be as big around as a beer bottle, so closely are the tinted or bright-colored blue, or bright blue and white, or partly yellow flowers crowded upon their fleshy central stalks!

How truly decorative these huge plants are, set here and there on stony grassy alpine slopes on which they are apt to be by far the largest vegetation! Their only

competitors, so to speak, are an occasional bunch of grass, little tufted composites, loco weeds, drabas or other similar low-growing alpines with which rock-gardeners like to experiment. In the sunlight or early morning as the growing warmth of day sends wisps of fog up and around the little valleys in which these lupines grow, the heavy moisture of night (often at this alti-



"SUN-DIAL" OR COMMON WILD LUPINE

This species is common in Chicago Area woodlands.

tude congealing as frost) clings to the hair that commonly covers the stalks of leaves and flowers and glistens as the plants are moved delicately by air-currents caused by the rapid local changes in temperature. In such a landscape grew the *Lupinus Fieldii* which was discovered on one of the expeditions sponsored by Mr. Marshall Field. It has a wand-like stalk of flowers in pastel shades of pink and blue.

SOME ARE SMALL TREES

No less interesting and beautiful are the lupines of the western part of the United States where, as in Peru, one species or another is found from sea-level to the higher mountain slopes and where they display, if not the same, nearly as great diversity in habit and in manner of growth. Great areas of semi-desert lands in spring are evanescently colored when the closely crowded thousands of plants of the little annual lupines like "blue bonnets" (the state flower

of Texas) are in bloom, although each plant is only a few inches high and has only a few bright blue flowers. In a short time these hordes of plants have disappeared completely. On the other hand, mostly in regions of considerable rain as on the higher hills and mountain slopes, lupines are often shrubs or even small trees with the trunk well defined. The leaves, especially of the shrubby species, are apt to be silvery, at least on one surface, from the close covering of silky hairs which enhances the beauty of the foliage. The leaves of all species are divided into several leaflets that spread like the spokes of a wheel during the day, but at night droop around the stalk, or more or less close together vertically. From this characteristic the plants are known in some regions as "sun-dials." Perhaps this movement of the leaflets protects the species of high elevations from the too heavy dew or frost of night, and those of lower altitudes from excessive rain or evaporation.

MANY KINDS IN CALIFORNIA

There are more kinds of lupines in California and in Peru than anywhere else—in Peru alone botanists have described upwards of a hundred species—and yet only about twenty have been recorded as having been in cultivation and many of these are rarely seen. Obviously these lovely plants, so diversified and easy to grow, deserve greater propagation. Some of the semi-desert perennials would be suitable where water is at a premium, and the range of color is from shades of blue or purple to white and golden yellow. Among the cultivated species is a yellow one from southern Europe and a tall strict-stemmed one from the Andes with blue and white flowers, the banner with a yellow spot in the center. This attractive species (*Lupinus mutabilis*) is of further interest because in Peru it is grown as a field crop for the bean-like seeds that are commonly used for food. There are two forms—one produces seeds that are glossy jet-black; those of the other form are snow-white. The latter are attractive "beans," sold in the markets as "chochos."

SOURCE OF A POISON

The water in which they are soaked for cooking is used as an insecticide and fish poison. In spite of the origin of the Latin name *Lupinus* from the word for wolf, in allusion to a classical superstition that a crop of lupines destroys the fertility of the soil, the contrary is true of lupines as of other leguminous plants. The white lupine of Asia is a well-known cover crop for poor soils, and it is often plowed under in order to increase fertility. Sometimes it is harvested as a valuable fodder plant.

Opal's Colors an Illusion

The brilliant colors of the opal belie the true nature of the stone, which is colorless; they are the effect of a platy structure. This breaks up white light into its component spectral colors in the same way a prism does.

RARE COLLECTION ILLUSTRATES CHINA'S NEW STONE AGE

BY C. MARTIN WILBUR

CURATOR OF CHINESE ARCHAEOLOGY AND ETHNOLOGY

Contrary to popular belief, Chinese civilization is not so extremely ancient. It was decidedly later in starting than the civilizations which developed in the Nile valley, in Mesopotamia, and in India. Archaeologists can employ with confidence the

Before 1400 B. C. the Chinese, so far as we know, had a primitive culture comparable to the culture of the Indians in the north-eastern United States when white settlers found them. This phase of culture is called the "Neolithic" or New Stone Age. These primitive Chinese did not know how to make objects of metal, nor how to write, but they

Arrowheads and sling shots represent hunting, while a fragment of pottery that was impressed with a very coarse fabric is evidence of primitive weaving. An idea of one type of early Chinese village and of the principal domesticated animals and crops is conveyed on a special panel painted by Mr. Millard Rogers, a volunteer who also had an important part in planning the unusual layout.

The second new exhibit emphasizes the geographical and chronological aspects of China's prehistoric cultures. There were at least two variations of the basic Neolithic culture in North China. These variations are called the Painted Pottery Culture in the northwestern highlands and the Black Pottery Culture in the eastern lowlands.

Archaeologists have known about the Painted Pottery Culture for twenty years, since the first site, at Yang-shao in Honan province, was excavated by a Swedish explorer, J. G. Andersson. Since that time typical painted pottery has been found in about twenty different places in the northwestern part of China, but there have not been enough careful excavations or detailed reports so that we can generalize about the culture. A few details, however, stand out.

The Painted Pottery Culture (sometimes also called Yang-shao after the name of the place where it was discovered) seems to have begun a little earlier than the Black Pottery Culture. The Neolithic people who developed it made ordinary pottery of several sorts, but their most distinctive ware was an orange or reddish pottery, carefully smoothed and then painted with brown or red designs. The Neolithic people who made it lived by agriculture and pig-raising as well as by hunting and fishing, and used stone tools primarily. In the exhibition miniature painted jars are placed on a large map of China to show localities where this painted pottery has been found.

An absorbing question in regard to the painted pottery of northwestern China is whether or not it is related to similar painted pottery found in the Near East, southern Russia, and the Danube valley. As more and more exploration and excavation has been done, more sites with painted pottery have been found along the presumed routes by which it could have entered China from the west. An analysis of the designs also seems to indicate a generic relation between some of the western pottery and some of that found in China. There is no evidence, however, that the people who made the pottery in China migrated there from the west.

Chinese archaeologists deserve all the credit for having established the Black Pottery Culture as an entity. The great Chinese research organization, Academia Sinica, excavated the first black pottery site at Lung shan (or Ch'eng-tzu-yai) in Shantung province, in 1930 and 1931. Since then more than seventy sites belonging to



NEOLITHIC CHINESE "DESIGN FOR LIVING"

Recently installed exhibit of material representing chief traits of the inhabitants of China during the New Stone Age. Employing "subjective display technique" now being extended through the Museum, this case shows, with a few specimens linked together in an integrated story, something of conditions before 1400 B. C.

date 2900-3000 B. C. for both Mesopotamia and Egypt, but the earliest date that can be mentioned with an equal degree of confidence for China is "about" 1400 B. C.—and this may be incorrect by a century. According to historical tradition it was about then that a ruler of the Shang dynasty moved his capital to a place now known as Anyang, in the province of Honan. Archaeology picks up the trail of the historical Chinese at Anyang where some of the palace area, the royal tombs, and certain archives have been scientifically excavated. Any date given for a site that was inhabited earlier is an estimate.

Field Museum has an unusual collection of Chinese prehistoric specimens collected during the past thirty-five years, but very few of them were scientifically excavated. Usually prehistoric material is not of itself very interesting to the average visitor. Therefore, in designing three new exhibits which have just been placed on view (Hall 24, Cases B, C, and 1), an important objective has been to give the specimens meaning and to draw attention to them by a colorful and attractive layout. One of the exhibits illustrates some general facts about the way people lived in China during the New Stone Age. Another shows the geographical distribution of early Chinese cultures and their chronological sequence.

made improved tools of stone, bone, and shell. They also made pottery and coarse cloth. Besides hunting and fishing and gathering wild plants, they grew millet and a few vegetables, and raised pigs and dogs. These accomplishments marked a great advance over the culture of the Old Stone Age, the Chinese phase of which is treated in an adjoining exhibit that was described in *FIELD MUSEUM NEWS* for November, 1942.

The Chinese of the New Stone Age also had crude houses and lived in villages. In the northwest they dug caves for their homes, just as millions of Chinese farmers in that region do today. Others probably made their houses by digging large pits in the ground and covering them with slanting roofs, or by building crude huts of pounded earth. Almost nothing is known of the social life, religion, or language and customs of the Neolithic Chinese. When they began to write they left records which aid in understanding such intangible things.

The new exhibit features only a few Neolithic specimens which particularly bring out these statements. Stone axes, adzes, and chisels for working wood, a stone hoe and a grain-cutter for agriculture, a grain grinder, and an all-purpose stone knife show what the Neolithic people had for tools. Pottery is shown which was made for storing and cooking food, and for burial with the dead.

the Black Pottery Culture have been found and a number of them have been excavated.

The Black Pottery Culture (sometimes called Lung-shan after the name of its place of discovery) was developed by Neolithic farmers, who often surrounded their villages with walls of pounded earth and established them in clusters in river valleys. This culture belongs to the great plain of eastern China as shown by tiny black pots placed on the map where Black Pottery sites are known. These people had learned to use the potter's wheel and made a distinctive jet-black pottery, in addition to ordinary gray and brown wares. Usually they decorated their pottery only by incised lines. They specialized in making tools from shell, although they also made the more common stone and bone tools.

The Black Pottery Culture was closely related to the succeeding culture of the Bronze Age. Certain of the most distinctive habits of the Bronze Age Chinese were already practised in a simple form by the people who lived in the Black Pottery villages. One of these traits was building city walls of pounded earth. To make this type of wall wooden frames were put in position and earth was dumped between the frames and pounded down until it was exceedingly hard. Walls made by this method could be built quite high and sometimes endured for centuries. The wall at Ch'eng-tzu-yai can still be distinguished.

Another trait was fortune-telling. The Bronze Age Chinese predicted future events, or tried to learn the outcome of their plans by consulting their ancestors. To do so they inscribed a question on the shoulder bone of an ox or on a piece of tortoise-shell. Then they applied heat to the other side of the bone. This produced a crack upon the face. The direction in which the crack ran was believed to indicate a positive or negative answer to the query. It is due to this practice of divination, known as scapulimancy, that we know as much as we do about the Shang people at Anyang, because great piles of used oracle bones have been discovered and translated. Thus we know what the Shang people worried about, and what was foremost in their minds. The Black Pottery people also practiced scapulimancy in a primitive form. There are a number of other features that link the Black Pottery people and the Bronze Age people together.

When evidences of the Painted Pottery and Black Pottery variations of Neolithic culture have been found in the same excavated site with evidences of the Bronze Age the sequence always is: painted pottery near the bottom, black pottery next above, and bronze remains nearest the top. This proves that in those regions where the three cultures existed in sequence the Painted Pottery Culture was oldest, the Black Pottery came next, and the Bronze Age was the latest.

This chronological information is illustrated in the second exhibit by steps painted in different colors—green, aquamarine, gray, and salmon. On each step ancient pottery typical of the period is shown, with jars of the Basic Neolithic culture at the bottom, of the Painted Pottery Culture and of the Black Pottery Culture in order, and of the Bronze Age at the top.

Some of the painted pottery turned out by the Neolithic people of northwest China was decidedly handsome. Field Museum is fortunate in having recently acquired ten of these unusual jars, all presumably more than 3,500 years old, and they are exhibited in the third of the new installations. Since a spiral pattern is common on some of the best painted pottery, this motif was chosen for the layout. The jars are arranged against a large spiral of aquamarine color that was chosen to complement the orange cast of the pottery itself. Some visitors have considered the effect dramatic.

CONSERVATION BRIEFS

IV. Plants

BY PAUL C. STANDLEY
CURATOR OF THE HERBARIUM

Despite gasoline rationing, thousands of people will somehow go to and tramp through the countryside of the Chicago region during the next few weeks to enjoy the perennial miracle of the procession of spring flowers. The thickets of dogwood and crabapples, the fields of buttercups, dandelions, Indian paint brushes, and mustard, and in the woods the more delicate but no less brilliant colonies of violets, wake robins, Dutchman's breeches, spring beauty, bluebells, lady's slippers, hepaticas, and bloodroot, with dozens of others, afford a display of fresh and beautiful color such as scarcely is surpassed anywhere.

Fortunate is the Chicago region to retain, in spite of its situation in one of the most intensively cultivated districts of the United States, such areas as the Cook County Forest Preserves and the Indiana State Park, where native plants still flourish in abundance. Equally fine displays may be seen in woodlands under private ownership. Especially noteworthy are the shores of Lake Michigan near Waukegan, an area unique in Illinois. The only threat to permanent preservation and increase of these features that add so much beauty to a prairie region lies in the destruction of wild flowers and decorative shrubs by thoughtless travelers in the country.

The loveliness of the early flowers is a constant temptation to lay hands upon them. Those people who appreciate natural beauty are mostly persons of good manners, and it is only through thoughtlessness that they sometimes cause great damage.

Most of the spring flowers will quickly

when picked, and never revive even when placed in water. Left alone they will continue to adorn the woodlands, where their beauty finds its natural and best setting. Leave the dogwood and crabapple, the hawthorn, and especially the more delicate and rare woodland plants where you may enjoy them again next year. Thus they will be able to spread by their roots or by seeds. If you must pick flowers, gather only blue violets, dandelions, mustards, etc.

Protected by an intelligent and appreciative public, our present very extensive native vegetation, whose beauty began to be appreciated only when on the verge of extinction, will undoubtedly expand itself.

Our native plants have yielded many products of importance to Man—to the aboriginal Indians, to the early settlers, and even to us of the present day. They include fruits like the crabapple and sand cherry, nuts such as beech and hickory nuts and walnuts, pot herbs or salad plants like curly dock, dandelion, and pusley. Perhaps among them there yet may be found some that will provide wartime substitutes for plant products which the country now urgently needs. A near relative of our dandelion is said to be providing the Soviet Republics with some of their sorely needed rubber. Other Illinois plants might well furnish fibers or paper material. If our native plants can supply some of these needs, the most ardent conservationist will be happy to see even our rarer plants mobilized to help defeat our enemies.

(Next issue:—Conservation of Reptiles.)

NEW MEMBERS

The following persons became Members of Field Museum during the period from April 1 to May 10:

Associate Members

Miss Maud F. Back, Marvin H. Coleman, Anthony S. Holub, Michael L. Layden, Justus L. Schlichting, Robert J. Speer, Herman Spertus.

Annual Members

Dr. Bernard Auerbach, Miss Mary Breckinridge, Charles Borin, Harry M. Brostoff, Robert C. Brown, Jr., Harry J. Cogswell, C. T. Collett, Dr. T. J. Coogan, Dr. Beulah Cushman, Edward Decker, Lawrence D. Dibble, David Gordon, Walter C. Green, Mrs. Emil J. Gutzsell, G. C. Hass, Miss Lily Heffernan, Stuart Hertz, Mrs. Joseph Huska, Walter J. Jarratt, John B. Jarrett, S. E. Johanigman, Carl Ray Latham, Charles C. Livingston, R. R. Lusk, Frederick Mayer, Dr. Gertrude McKeever, Karl B. Miller, Ernest E. Moll, Dr. E. M. Moore, Nelson S. Moore, Dr. Marguerite Oliver, Arno H. Phillips, Louis S. Platt, Mrs. J. A. O. Preus, Edwin G. Rellihen, George J. Renaldi, Mrs. Bartlett Richards, Mrs. Oscar J. Ruh, William R. Sachse, Wallace B. Shlopach, Harry Silverman, Dr. Charles G. Spurrison, Ray Snyder, Jan Taeyaerts, Dr. Edward C. Wach, Mrs. Marshall A. Waters, Frank D. Weber, H. J. Weber, Arthur A. Wolf.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN

JOHN P. WILSON

OFFICERS

STANLEY FIELD	President
ALBERT A. SPRAGUE	First Vice-President
SILAS H. STRAWN	Second Vice-President
ALBERT B. DICK	Third Vice-President
*CLIFFORD C. GREGG	Director and Secretary
ORR GOODSON	Acting Director and Acting Secretary
SOLOMON A. SMITH	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD.....Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN.....Chief Curator of Anthropology
B. E. DAHLGREN.....Chief Curator of Botany
HENRY W. NICHOLS.....Chief Curator of Geology
KARL P. SCHMIDT.....Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE.....Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

CURATOR A. C. WEED RETIRES

Mr. Alfred C. Weed, Curator of Fishes for twenty-two years, retired from the service of the Museum on April 30.

Mr. Weed joined the staff on January 1, 1921, and has been materially responsible for the assemblage of the Museum's extensive fish collections and the building up of the exhibits, both the habitat groups and systematic displays in the recently opened Hall of Fishes (Hall O), and the exhibits in other halls prior to the opening of the new one. He has conducted various expeditions for the institution, the most notable being to the upper Mississippi in 1922, and the fishing waters of Louisiana and Texas in 1923 and 1924; and he participated as ichthyologist on the two Rawson-MacMillan Subarctic Expeditions (to Labrador and Baffin Land) in 1926 and in 1927-28. He also has carried on a great deal of local field work in Illinois, Indiana, Wisconsin, and Michigan. The Museum has published various results of his researches, and he has been a frequent contributor to **FIELD MUSEUM NEWS**. Before coming to Field



A. C. WEED

Museum, Mr. Weed was an ichthyologist on the staff of the United States National Museum, Washington, D.C. for five years. He was born at North Rose, New York, July 28, 1881. He is a graduate of Cornell University, and did post-graduate work there after earning his B.A. degree.

WAVES ENLIST ANOTHER MUSEUM LECTURER

Miss Marie B. Pabst, a lecturer on the staff of the James Nelson and Anna Louise Raymond Foundation since 1936, has taken leave of absence from her Museum duties to enlist in the WAVES, Women's Auxiliary of the U. S. Navy. She is the second Raymond lecturer to join that service, Miss Elizabeth Best having been inducted early in February.

Miss Pabst came to the Museum after graduating from the University of Minnesota, where she specialized in botany. Her home is in Springfield, Illinois. Since coming to Chicago, she has been very active as a leader in the Girl Scouts movement, working with groups on the north side. The Waves are sending her to Hunter College, New York, for preliminary training.



MARIE PABST

Museum Aids OCD and Red Cross

At the request of the local Office of Civilian Defense, Field Museum recently assigned Assistant Taxidermist Frank C. Wonder to articulate two human skeletons. They will be used in demonstrations for Red Cross first aid classes.

Staff Notes

Miss Elizabeth Blinn Stone, for more than twenty years Librarian for the Department of Zoology, and secretary to Dr. Wilfred H. Osgood, Chief Curator (now Curator Emeritus) of Zoology, recently retired from the Museum's service under the provisions of the Employees' Pension Plan. She has taken up residence in Los Angeles, California, her home in earlier years.

Dr. Wilfrid D. Hambly, Curator of African Ethnology, recently made one of his quarterly visits to Washington, D.C., as a consultant-member of the African Committee of the National Research Council, which is concerned with war problems. On April 28 he lectured in Chicago for the Y.W.C.A. on "Peoples Our Soldiers Will See in Africa."

After a year's service driving ambulances of the American Field Service in Africa, during which he suffered minor wounds, Mr. Bert E. Grove has returned to his post as a lecturer on the staff of the Raymond Foundation.

Miss Elizabeth Best, Raymond Foundation lecturer who was granted leave of absence recently to enlist in the WAVES (Women's Auxiliary of the U. S. Navy), has completed the officers' training course and been commissioned an Ensign. She has been assigned to a post at Seattle.

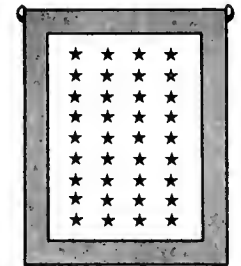
FIELD MUSEUM HONOR ROLL

Now in the Nation's Service

Army

THEODORE ROOSEVELT, Trustee—Brig. Gen.
GEORGE A. RICHARDSON, Trustee—Lt. Col.
CLIFFORD C. GREGG, Director—Colonel, G.S.C.

DR. JOHN RINALDO, Associate, Southwestern Archaeol.—Staff Sgt.
DR. SHARAT K. ROY, Curator, Geol.—Capt.
D. DWIGHT DAVIDS, Curator, Anat. and Osteol.—Pvt.
EMMET R. BLAKE, Asst. Curator, Birds—Corp.
RUPERT L. WENZEL, Asst. Curator, Insecta—Capt.
WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.
HENRY HORBACK, Asst., Geol.—Pvt.
JAMES C. MCINTYRE, Guard—2nd Lt.
RAYMOND J. CONNORS, Guard—Pvt.
FRANK J. DUTKOVIC, Janitor—Pvt.



Navy

LESTER ARMOUR, Trustee—Lieut. Comdr.
JOSEPH NASH FIELD, Trustee—Lieut. (S.G.)
COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut. (S.G.)
DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol.—Ensign
JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics)
PATRICK T. MCENERY, Guard—Master-at-Arms
JOHN SYCKOWSKI, Guard—Ch. Commissary Steward
GEORGE JAHRAND, Guard—Ch. Water Tender
CLYDE JAMES NASH, Guard—Ch. Gunner's Mate
NICHOLAS REPAR, Printer—Aviation Machinist's Mate 3C.
MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C.
HERBERT NELSON, Painter—Painter 1C.
ELIZABETH BEST, Guide—Lecturer—Ensign, WAVES
MARIE B. PABST, Guide—Lecturer—WAVES

Marine Corps

MELVIN A. TRAYLOR, Jr. Associate, Birds—2nd Lt.
COAST GUARD
M. C. DARNALL, JR., Guard—Ensign
JOHN MCGINNIS, Guard—Ch. Boatswain's Mate

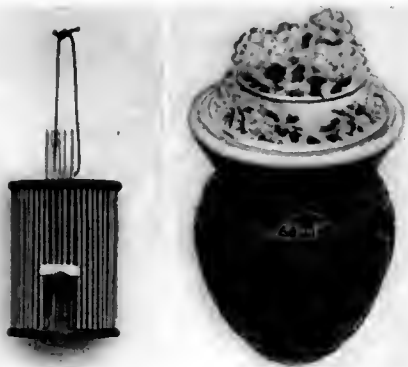
Other Services

BERT E. GROVE, Guide—Lecturer—American Field Service
RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services
BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army
LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U. S. Government
DR. JULIAN A. STEYERMARK, Asst. Curator, Herbarium—field work for Board of Economic Warfare
DR. C. MARTIN WILBUR, Curator, Chinese Archaeol. and Ethnol.—Staff of Office of Strategic Services

THINGS YOU MAY HAVE MISSED

Paraphernalia of China's Cricket Cult

In China there is a cult of the cricket with thousands of followers. The cultists divide into two classes—those who prize crickets as musicians, and a sporting ele-



ACCESSORIES OF CRICKET FAD

Skillfully made bamboo trap for capturing crickets, on left. Cage for crickets, on right, made of artistically carved gourd coated with red lacquer. The cover is of ivory, shaped to represent three lions playing ball. (In Hall 32).

ment who pit the insects against each other in fighting contests under a highly formalized set of rules. Rigorous training programs are maintained to prepare the cricket champions, with all the fanfare that enters into the training of an American boxing champion and his challenger. Large sums of money are spent upon collecting and training the crickets, and greater sums change hands in betting upon the results.

Elaborate housing and furnishings are provided for both the musical and the fighting crickets. An exhibit of these tiny objects, many of them fashioned of the finest and most expensive materials, and embellished with highly artistic carving and other types of decoration, forms an interesting feature of Hall 32.

Included in the display are examples of the elaborate traps used for capturing crickets; especially prepared gourd and ivory cages in which they are kept; tiny porcelain dishes for food and water, as well as tiny beds, with which cages are furnished; and ticklers used to stimulate both songs and fighting spirit. There is a specimen of the type of jar used as an arena for championship fights, with two crickets posed in fighting stance. Elaborately carved walnut shells, worn by Chinese on their girdles in order to carry singing crickets wherever they go, are also shown. Much of the material exhibited came from the imperial palace or the homes of ancient families of Peking. There are altogether about 240 pieces, collected by the late Dr. Berthold Laufer, former Curator of Anthropology and world-famed Sinologist, as leader of the Marshall Field Expedition to China

(1923). Dr. Laufer made a profound study of the cricket cult, the results of which are charmingly presented for laymen in the Museum's Anthropology Leaflet 22, *Insect-Musicians and Cricket Champions of China*.* Herewith is an abstract of some portions of this leaflet:

FIGHTING CRICKET CHAMPIONS AND MUSICIANS OF CHINA

Of the many insects that are capable of producing sound in various ways, the best known and the most expert musicians are the crickets. Wings and wing covers furnish the means whereby the male cricket can produce its familiar chirping sound; the young and the females cannot chirp. The adult male makes the sound by raising his wing covers above his body and then rubbing their bases together so that the file-like veins of the under surface of one wing-cover scrape the upper surface of the other. The object of the chirping or stridulating is somewhat conjectural. It may be a love song, mating call, or an expression of some other emotion. The Chinese, however, assert that the black tree-cricket is the only species that requires the presence of the female to stimulate song.

HARBINGERS OF GOOD FORTUNE

The praise of the cricket is sung in the odes of the *Shi king*, the earliest collection of Chinese popular songs. People then enjoyed listening to its chirping sounds, while it moved about in their houses or under their beds. It was regarded as a creature of good omen, and wealth was predicted for families which had many crickets on their hearths.

There are various methods of catching crickets. They are usually captured at evening. In north China a lighted candle is placed near the entrance of their holes, and a trap box is held in readiness. Attracted by the light, the insects hop out of their retreats and are caught in the traps made of bamboo or ivory rods. Some of the traps are veritable works of art, surmounted by carved dragons, and with doors that shut very accurately. In the south a "fire basket" made of iron rods, within which a charcoal fire is kept burning, is used. This drives the insects out of their dens. Sometimes the cricket hunters reach their object by pouring water into the holes where the crickets hide.

Many people rear hundreds of crickets in their homes, and have several rooms stacked with jars to shelter them. The rich employ experts to look after theirs. As you enter one of their houses you are greeted by a deafening noise of cricket voices which a Chinese is able to endure indefinitely.

OWNERS DONATE OWN BLOOD

The crickets feed on fresh cucumber, lettuce and other greens, and also on chopped fish, various other kinds of insects,

* 28 pages, 12 plates. 40 cents. On sale at The Book Shop of Field Museum; mail orders accepted.

and even receive honey as a tonic. Fighting crickets receive particular attention and nourishment in a dish consisting of a bit of rice mixed with fresh cucumbers, boiled chestnuts, lotus seeds, and mosquitoes. Just before a scheduled fight they are given a bouillon made from the root of a certain flower. Some fanciers allow themselves to be stung by mosquitoes, and when these insects are full of human blood they are given to favorite fighting crickets.

TOURNAMENTS IMPRESSIVELY STAGED

Crickets are imbued with a natural instinct to fight. The Chinese offer the following explanation: the crickets live in holes, and each hole is inhabited by a single individual. This manner of living gives rise to frictions and frequent combats over the housing problem. Two rivals will jump at each other's heads with furious bites, and the combat will usually end in the death of one of the fighters. Also, when driven by hunger, or when several are confined in a cage, they do not hesitate to eat one another. The Chinese regard good fighters as incarnations of great heroes of the past. The strongest and bravest of these insect "soldiers" are dubbed "generals."

The tournaments take place in an open space, on a public square, or in a special



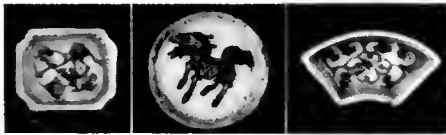
CARVED WALNUT SHELL

For carrying singing crickets on one's person. From China's K'ien-lung period (1736-95). The decorations represent figures of significance in Chinese mythology. (Hall 32).

house termed "Autumn Amusements." There are heavyweight, middleweight, and lightweight champions. The wranglers are always matched on even terms according to color, size, and weight, being carefully weighed in on wee scales at the opening of each contest. A silk cover is spread over a table on which are placed the pottery jars containing the cricket gladiators. The jar is the arena in which the prize fight is

staged. The referee, called "Army Commander" or "Battle Director", announces the contestants and recites the history of their past performances. He then spurs the two crickets to combat, using a tickler to stir the heads, ends of the tails, and hind legs of the insects. Thus excited, the two opponents stretch their antennae and jump at each other's heads. The antennae are the chief weapons. One of the belligerents may soon lose one of its horns, and retort by tearing off one of its enemy's legs. The two become more and more exasperated and fight mercilessly. The victor often pounces with the whole weight of its body upon the opponent, severing the latter's head completely.

Cricket fights in China have developed into a veritable passion. Bets are concluded,



TINY DISHES FOR FEEDING CRICKETS

Elaborate blue-and-white porcelain "tableware" used by the Chinese for their pampered pet crickets. (In Hall 32).

and large sums are wagered on the prospective champions. The stakes are in some cases very large, and at single matches held in Canton are said to have aggregated as much as \$100,000. Choice champions fetch prices up to \$100—equal to the value of a good horse in China! Owners of famous crickets travel long distances to meet their competitors. The champion of champions is honored with the title Grand Marshal.

REWARDS OF VICTORY

Near Canton extensive mat sheds are erected and divided into several compartments. A placard is posted on the sides of the building setting forth the various stakes previously won by each cricket. The owner of a tournament-winning cricket, besides his winnings on bets, is presented with a roast pig, a piece of silk, and a gilded ornament for his ancestral altar. The names of victorious crickets are inscribed on a carved ivory tablet; sometimes the inscription is inlaid in gold. On returning to his home community, the champion cricket owner is greeted with rejoicing crowds, flowers, flags, and music, and his village gains as much publicity as an American town which produces a baseball or boxing champion. A cricket which has won many victories is, upon death, solemnly buried in a small silver coffin.

So seriously do the Chinese take this sport that they say of a man who has failed that he is a "defeated cricket—he gives up his mouth" (equivalent to "throwing in the towel").

The earliest and most primitive types of fishes, fossilized for hundreds of millions of years, are exhibited in Hall 38.

FIELD MUSEUM NEWS ON WAR SCHEDULE

This issue of FIELD MUSEUM NEWS, published as of June 1, constitutes the June, July, and August numbers (Vol. 14, Nos. 6-7-8). The September and October numbers will likewise appear as a single issue, scheduled for publication September 15. The November and December issues will be published on normal schedule.

This reduction is due to the depletion of the Museum staff by the calling of many members into war service, as well as to the necessity of conserving paper.

CHILDREN'S SUMMER PROGRAMS

Nine, instead of the hitherto customary six summer vacation programs for school children, will be presented on Thursday mornings this July and August by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. In addition, instead of the usual single showing for each motion picture, this year there will be two presentations of each, one at 10 A.M., and one at 11. Admittance is free. The programs will be given in the James Simpson Theatre of the Museum.

In addition to motion pictures, two of the programs will include personal appearances by the explorers who made the films.

Following are the dates and subjects of each program:

July 1—WHEELS ACROSS INDIA (*the film record of the famous Denis-Roosevelt Expedition*).

July 8—GULLIVER'S TRAVELS (*Swift's famous story of Lilliput and Brobdignag, in colors*).

July 15—YOUNG ADVENTURERS IN CANADA'S CANOE COUNTRY. With a lecture by Mackenzie Ward.

July 22—DOWN WHERE THE NORTH BEGINS (*northern South America*).

July 29—FARMING FOR VICTORY (*life in typical American rural areas*).

August 5—KING OF THE SIERRAS (*the story of a wild horse in the Far West*).

August 12—HIGH ADVENTURES (*a mountain climber's story*). With a lecture by C. Findley Bowser.

August 19—"BRING 'EM BACK ALIVE" (*motion pictures made by Frank Buck*).

August 26—VACATION SPECIAL (*an hour of animated cartoons*).

Disputes still continue as to what woods are entitled to be called mahogany. Examples of various species from South America and Africa, accepted botanically and commercially as true mahoganies, are exhibited in the Hall of Foreign Woods (Hall 27).

GUIDE-LECTURE TOUR SCHEDULE FOR JUNE, JULY, AND AUGUST

Conducted tours of exhibits, under the guidance of staff lecturers, will be made at 2 o'clock every afternoon except Sundays during June.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours will be given, covering outstanding features of all four Departments—Anthropology, Botany, Geology, and Zoology. Special subjects will be offered on Wednesdays and Fridays; the schedule of these for the period up to June 30 follows:

Wednesday, June 2—Peoples of the Past (Bert Grove).

Friday, June 4—What We See in Faces (Miss Loraine Lloyd).

Wednesday, June 9—Stories in Stones (Bert Grove).

Friday, June 11—Feet That Wear No Shoes (Miss Loraine Lloyd).

Wednesday, June 16—Matrimonial Fashions (Mrs. Roberta Cramer).

Friday, June 18—Flowers, Showy and Inconspicuous (Miss Miriam Wood).

Wednesday, June 23—The United Nations' Market Basket (Miss Miriam Wood).

Friday, June 25—Australia and New Zealand (Mrs. Roberta Cramer).

Wednesday, June 30—Medicine Men (Mrs. Roberta Cramer).

During July and August there will be tours twice a day from Monday to Friday inclusive, at 11 A.M. and 2 P.M., but there will be no tours on Saturdays and Sundays during those months. The special schedule for July and August is as follows:

Mondays: 11 A.M., Stories in Stones; 2 P.M., General Tour of Exhibition Halls.

Tuesdays: 11 A.M., Animals the World Around; 2 P.M., General Tour.

Wednesdays: 11 A.M., People—Where and How They Live; 2 P.M., General Tour.

Thursdays: 11 A.M. and 2 P.M., General Tours.

Fridays: 11 A.M., Plants in The Use of Man; 2 P.M., General Tours.

Persons wishing to participate should apply at North Entrance. Tours are free. By pre-arrangement at least a week in advance, special tours are available to groups of ten or more persons.

Technical Publications Issued

The following technical publication was recently issued by Field Museum Press:

Anthropological Series, Vol. 35. *Survey and Excavations in Southern Ecuador*. By Donald Collier and John V. Murra. May 15, 1943. 108 pages, 54 plates, 18 text figures, and 3 maps.

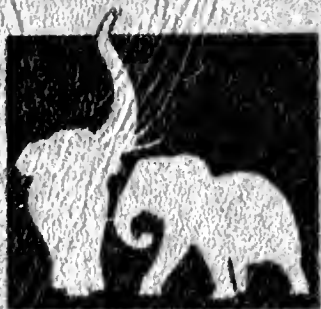
Note to Donors of Gifts

The usual list of Gifts to the Museum has been omitted from this issue of FIELD MUSEUM NEWS, but will be merged with the new list in the next number (September).

FIFTY YEARS

of Progress

1893



1943

FIELD MUSEUM
OF NATURAL HISTORY

FIELD MUSEUM HONOR ROLL

NOW IN THE NATION'S SERVICE



Army

THEODORE ROOSEVELT, Trustee—Brigadier General
GEORGE A. RICHARDSON, Trustee—Lieutenant Colonel
CLIFFORD C. GREGG, Director—Colonel, G.S.C.
DR. JOHN RINALDO, Associate, Southwestern Archaeology—Staff Sergeant
DR. SHARAT K. ROY, Curator, Geology—Captain
D. DWIGHT DAVIS, Curator, Anatomy and Osteology—Corporal
EMMET R. BLAKE, Assistant Curator, Birds—Corporal
RUPERT L. WENZEL, Assistant Curator, Insects—Captain
BERT E. GROVE, Guide-Lecturer—Private
WILLIAM BEECHER, Temporary Assistant, Zoology—Private
HENRY HORBACK, Assistant, Geology—Private
JAMES C. MCINTYRE, Guard—Second Lieutenant
RAYMOND J. CONNORS, Guard—Private
FRANK J. DUTKOVIC, Janitor—Private

Navy

LESTER ARMOUR, Trustee—Lieutenant Commander
JOSEPH NASH FIELD, Trustee—Lieutenant (S.G.)
COLIN CAMPBELL SANBORN, Curator, Mammals—Lieutenant (S.G.)
DR. ALEXANDER SPOEHR, Curator, North American Ethnology—Lieutenant (J.G.)
JOHN W. MOYER, Taxidermist—Chief Specialist (Bureau of Aeronautics)
PATRICK T. MCENERY, Guard—Master-at-Arms
JOHN SYCKOWSKI, Guard—Chief Commissary Steward
GEORGE JAHRAND, Guard—Chief Water Tender
CLYDE JAMES NASH, Guard—Chief Gunner's Mate
NICHOLAS REPAR, Printer—Aviation Machinist's Mate 3rd Class
MORRIS JOHNSON, Carpenter—Carpenter's Mate 2nd Class
HERBERT NELSON, Painter—Painter 1st Class
ELIZABETH BEST, Guide-Lecturer—Ensign, WAVES
MARIE B. PABST, Guide-Lecturer—WAVES

Marine Corps

MELVIN A. TRAYLOR, JR. Associate, Birds—First Lieutenant

Coast Guard

M. C. DARNALL, JR. Guard—Ensign
JOHN MCGINNIS, Guard—Chief Boatswain's Mate

Other Services

RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services
BRYANT MATHER, Assistant Curator, Mineralogy—Civilian Worker, Corps of Engineers, United States Army
LEWELYN WILLIAMS, Curator of Economic Botany—on special service for United States Government
DR. JULIAN A. STEYERMARK, Assistant Curator, Herbarium—field work for Board of Economic Warfare
DR. C. MARTIN WILBUR, Curator, Chinese Archaeology and Ethnology—Staff of Office of Strategic Services



Fiftieth Anniversary Number

FIELD MUSEUM NEWS

Vol. 14 (9-10)

September-October, 1943

Understanding and enjoyment of nature are prime human needs.

To supply these needs is the object of natural history museums.

FIFTY YEARS OF PROGRESS

Some of the History of Field Museum (1893-1943)
—and a Forecast of Its Future

By
STANLEY FIELD
President

FIELD MUSEUM was founded in 1893 by the late Marshall Field. A cultural awakening had been taking place in Chicago for some years previous. People generally were beginning to realize that the city needed better provisions for education, science, art, and beautification.

One of the prime needs noted for a long time past was that of a great museum to provide facilities for popular education along scientific lines. Encouraged by the enthusiasm that greeted the opening of the World's Columbian Exposition, the sponsors of a museum promptly instituted a campaign to raise the funds deemed necessary to carry through such a project. Their efforts met with remarkable success, and they obtained contributions in cash from the following: George M. Pullman, \$100,000; Mrs. Mary D. Sturges, \$50,000; Tiffany and Company, \$10,000; McCormick Estate, \$10,000; P. D. Armour, \$10,000; D. K. Pearsons, \$5,000; H. H. Porter, \$5,000; Martin A. Ryerson, \$5,000; Norman B. Ream, \$5,000; J. W. Doane, \$5,000; A. A. Sprague, \$5,000; Edson Keith, \$5,000; Lambert Tree, \$5,000; William A. Fuller, \$5,000; George E. Adams, \$5,000; R. T. Crane, \$5,000; A. C. Bartlett, \$5,000; and five contributors in lesser amounts totaling \$4,008.

Upon Mr. Marshall Field's return from Europe in October, 1893, the committee solicited and received his wholehearted sup-

port and a contribution of \$1,000,000. The *Chicago Evening Post* suggested that holders of exposition stock present their shares to the fund being raised for a natural history museum, and stock totaling \$1,500,000 par value was donated for the purpose by 1,100 stockholders; on this the Museum realized \$193,950.

A charter was obtained on September 16, 1893, under the title, Columbian Museum of Chicago. The name was changed on June 26, 1894, to Field Columbian Museum, and again changed on November 10, 1905, to the present form, Field Museum of Natural History.

Committees assigned to obtain material from exhibitors at the exposition, including foreign governments, private exhibitors, and various United States federal departments, met with great success. The immense amount of material thus obtained formed the nucleus of the Museum's present vast collections.

At a cost of \$100,000, Mr. H. N. Higinbotham purchased the collections of gems and



Stanley Field



THE MUSEUM'S FIRST HOME IN JACKSON PARK

jewels exhibited at the exposition by Tiffany and Company and presented them to the Museum for display in a special hall.

Mr. Edward E. Ayer, who was chosen as the first President of the Museum, generously contributed his anthropological collection of North American Indian material, valued at \$100,000.



Matzene photo

Founder Marshall Field

Dr. Frederick J. V. Skiff, who had been serving as Chief of the Department of Mines and Mining, and Deputy General of the exposition, was appointed the Museum's first Director, a position the duties of which he fulfilled

capably until his death on February 24, 1921.

Permission had been obtained for the use of the Fine Arts Building of the World's Fair, and, immediately upon the closing of the exposition, work was begun on the task of moving the exhibits and collections secured into the building, then classifying them and arranging them in the Museum halls. The Museum was dedicated and opened to the public on June 2, 1894, and occupied that building until the present structure was erected.

Much of the sum originally subscribed in cash—\$1,443,408—necessarily had to be expended during the early years to purchase collections, exhibition cases, and equipment, and to defray organizing and administrative expense. The remainder was set up in an endowment fund.

\$9,430,000 FROM MARSHALL FIELD I

Under the will of Mr. Marshall Field, whose death occurred on January 16, 1906, the Museum was bequeathed \$8,000,000, with the stipulation that \$4,000,000 was to be added to the endowment fund and \$4,000,000 was to be used for the construction of a new building, provided that a permanent site acceptable to the Trustees be made available without cost. This bequest of Mr. Field's brought the total of his gifts to \$9,430,000.

The Trustees of the Museum were determined, if possible, to place the new building near the downtown area and in as convenient

a location as possible for visitors from all three sides of the city. Several years elapsed before a satisfactory site could be agreed upon, but on March 22, 1911, a contract was entered into with the South Park Commissioners for the site now occupied by the present building. This site at that time consisted partly of ground occupied by the Illinois Central Railroad for a pier extending eastward into the lake and used by them for the storage of empty freight cars, and partly of an area then still under the waters of Lake Michigan. Up to this time no filling of the lake east of the Illinois Central tracks had taken place, and there existed some controversy as to whether the riparian rights rested with the railroad or with the state.

Negotiations were entered into by a committee composed of Mr. Edward B. Butler, Mr. Charles L. Hutchinson, and Mr. Charles H. Wacker, who were interested in settling the dispute once and for all. The parleys resulted in an agreement whereby the Museum obtained the desired site and the Illinois Central Railroad relinquished all of its claims to riparian rights and agreed to remove its pier. This settlement insured a good location for Field Museum, and made possible the filling in of the entire lake area lying east of the railroad tracks from Randolph Street south. That area is now famed for its development of a beautiful park, lagoons, and boulevards.

All obstacles thus being removed, plans for the building, which had been approved by Mr.



TRAINS DIRECTLY TO NEW BUILDING

Marshall Field prior to his death, were revised and contracts were let. Construction began on July 26, 1915, and by June, 1920, the building had been practically completed at a cost of \$7,136,866. Mr. James Simpson had donated

\$150,000 toward the cost of a theatre, which was named in his honor. The difference between the total cost of the building and Mr. Field's bequest of \$4,000,000 and its accretions during the years from 1906 to 1920, amounted to approximately \$838,000. This sum was made available by gifts, and the cost of construction has been fully liquidated.

For three years prior to completion of the building, the efforts of the entire staff were devoted to packing the collections and preparing them for transfer to the new building. This gigantic task consumed all the time of the staff, and all of the money at the disposal of the Trustees, so that nothing could be spent on expeditions, collection of material, research, or publications. Actual moving started on April 26, 1920. A railroad spur was built through Jackson Park to the old building, and another was built to the new building, and all of the collections, exhibition cases, and equip-



BARREN HALLS GREET INVADERS

ment were moved by the use of 321 freight cars and 354 five-ton truck loads. On June 1, the moving job was completed, and the arrangement of the halls and reinstallation of material began. By May 2, 1921, these tasks had been completed, and the Museum was opened.

SCHOOL EXTENSION WORK

In December, 1910, Mr. Norman Wait Harris made a contribution of \$250,000 in securities to found the N. W. Harris Public School Extension of Field Museum, and on March 4, 1919, various members of his family added another \$25,000. On June 2, 1924, Mr. Albert W. Harris and members of his family contributed \$100,000 to the fund, and again, in 1938, Mr. Albert W. Harris gave the Museum \$55,000 to offset a shrinkage which



ONE ELEPHANT COULDN'T CLEAR OBSTRUCTIONS

had occurred in some of the securities originally turned over by Mr. Norman Wait Harris. With this foundation the Museum has been able to extend its activities to all the public schools in Chicago, and many parochial and private ones, by the constant circulation of especially designed small traveling exhibits.

In 1925 the Museum became the recipient of a gift from Mrs. James Nelson Raymond of \$500,000 in securities, as a memorial to her husband. The income from this fund was designated to defray the cost of sending lecturers into the public schools of Chicago, to provide guides for lectures to classes from the public schools visiting the Museum itself, and to provide a series of programs of moving pictures each Saturday morning for the benefit of children in Chicago's public schools. Mrs. Raymond has augmented her original contribution of \$500,000 by sums of money annually, which now aggregate \$86,500.



Marshall Field III

In 1916 a group insurance plan for all employees was put into effect, and in 1938, due to a benefaction from Mr. Marshall Field III, a very liberal pension plan was instituted for the benefit of all employees of the Museum. The employees, as well as the Museum, contribute toward the Pension Plan, but the Museum paid up in full the entire "past service" liability. These two contracts give the employees a security that benefits both them and the Museum.



FIELD MUSEUM MEN HAVE RANGED THE EARTH ON 440 EXPEDITIONS—FOR PLANTS
ANIMALS, GEOLOGICAL AND ANTHROPOLOGICAL MATERIAL

Since the founding of the Museum, 440 expeditions have gone out to all parts of the world, and this number does not include many hundreds of small trips that are classified as local field work. Many valuable collections have been acquired by purchase and by exchange with other museums; others have been gifts of friends of the institution. As a result, the Museum today ranks among the four leading museums of the world, an achievement which has been accomplished in the short period of fifty years, and one of which the Board of Trustees and administration of the Museum are justly proud.

The collections shown in exhibition cases are but a small part of the total collections. In research, the study collections of museums are of the greatest importance. They are used by scientific men from all over the world and are the basis of much of our present-day knowledge of natural science. Those at Field Museum rank high both in extent and in usefulness.

During the fifty years under review, the Museum has printed 566 scientific publications, most of them the results of its own expeditions and research; these have been distributed to other museums at home and abroad, as well as to libraries and to scientists especially interested in the subjects covered. It has also published 88 leaflets written in popular style for the lay public.

For those unacquainted with the facilities of Field Museum, it may be well to call attention to the fact that the Library now contains approximately 130,000 books and pamphlets on anthropology, botany, geology, zoology, and related subjects, and offers the largest reference collection in its special fields in Chicago. It is particularly rich in anthropological and ornithological works, with collections that rank among the foremost in the world. Invaluable for research are the extensive series on its shelves of the publications of learned societies, academies, and universities all over the world. It is strictly a reference library, and its reading room is maintained to make the Library's resources available for the use of scientists, students, teachers, and others engaged in research. These facilities are extended, upon application, to laymen with problems requiring reference to the works in a scientific library. Amateur naturalists, and



persons with hobbies involving the natural sciences, will also find much of value in the Library.

MORE THAN 33,000,000 VISITORS

It is interesting to note that during the Museum's occupancy of the old building in Jackson Park, from June 2, 1894, to February 23, 1920, a period of approximately 26 years, the total attendance was 5,839,579, whereas the attendance in the present building from May 2, 1921, to June 16, 1943, approximately 22 years, has been 27,576,728. The comparison of these figures fully justifies the Trustees' action in approving the present site of Field Museum.

During the fifty-year period under review, a total of \$10,422,511 has been given to the Museum in addition to Mr. Marshall Field's gifts of \$9,430,241, making a total of \$19,852,752. In the same period, endowment funds have been raised to \$6,585,000 at market as of June 30, 1943, after a heavy write-down of real estate in the portfolio. As part of the endowment, a Life Membership Fund has been built up, the market value of which, as of December 31, 1942, was \$251,382, and an Associate Membership Fund of \$299,442.

NEW EXHIBITION METHODS

The Museum has realized the importance of exhibiting all types of material in a way that would attract and educate the layman visitor, and it has been one of the leaders in this practice. It was among the first museums to install animal habitat groups in natural settings—the series of American deer shown as they appear in each of the four seasons, mounted by the famous naturalist and taxidermist, Carl E. Akeley, were notable productions. Akeley's genius revolutionized methods in taxidermy. Few of the specimens first exhibited are on exhibition today. Through expeditions the Museum has collected the material and necessary data for the magnificent series of habitat groups in the halls of North and South American mammals, Asiatic mammals, African mammals, marine mammals, and American and foreign birds. Since moving into the present building, every exhibition case in all four departments has been reinstalled. Light-colored case interiors have been adopted, the objects exhibited have been carefully selected, and the amount of material in each case has been reduced. All have been relabeled, and maps, photographs, and drawings illustrating the

uses made of the various objects have been added.

The exhibits of ores and minerals in the Department of Geology are now being reinstalled a second time in a much more attractive and interesting way. While a good beginning has been made, unfortunately the program has had to be suspended for the duration of the war on account of the absence of so many members of the staff in the service of their country.

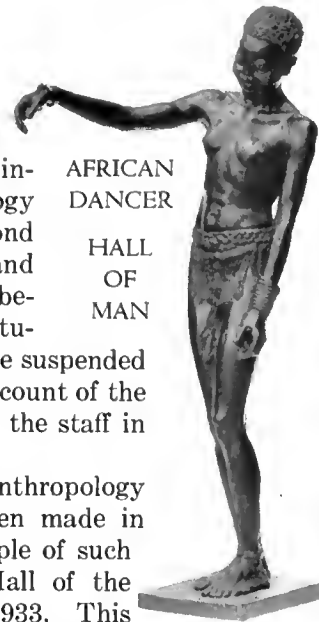
In the Department of Anthropology many radical changes have been made in old Museum methods. An example of such change may be found in the Hall of the Races of Mankind, opened in 1933. This hall contains nearly 100 life-size sculptures, chiefly in bronze, illustrating the principal racial types of the human species, as they exist today. All the sculptures are the work of Miss Malvina Hoffman.

The Hall of the Stone Age of the Old World, also opened in 1933, has for its principal feature eight reproductions of actual prehistoric sites in Europe with life-size restorations of men of the various periods represented. The restorations are the work of a noted sculptor, the late Frederick A. Blaschke, and are based upon data supplied by eminent anthropologists of Europe.

Perhaps the most radical change of all from old Museum methods is represented by the new Hall of the Archaeology of North, Central and South America. This hall, now about one-third completed, is an effort to exhibit material

AFRICAN
DANCER

HALL
OF
MAN



NEANDERTHAL FAMILY — HALL OF STONE AGE

of great interest, but difficult to display in a manner that will make it understandable or interesting to the layman. Judging by the reception that the part of the hall now open has received, it is evident that the completed hall will accomplish its mission and will set the pattern for still another reinstallation of exhibition halls in Anthropology.

The building was designed so that all exhibition halls would have daylight. Experience showed this to be a mistake, as it made a very unsatisfactory light in the halls and caused bad reflections. The sunlight also had a damaging effect on materials on exhibition.

Therefore, the windows were blocked out in all halls, and all skylights, with the exception of the one over the main hall, have been eliminated. All halls are now artificially lighted.

Gradually, during the years, general hall lighting has been changed to case lighting, and the recent introduction of fluorescent lighting has brought about a very revolutionary change in these methods. Many of the halls have been fully equipped with the new fluorescent lighting, but no further work can be done for the duration of the war.

A FORECAST OF FUTURE TRENDS

The first fifty years has seen Field Museum grow from what was at first only a dream in the minds of a few public-spirited men to one of the world's four leading natural history institutions. The second fifty years, upon which we are now embarking, may be expected to bring developments far outdistancing any progress thus far made. From the evidence before us today, it seems safe to predict that there will be two main trends in the future development of this and other great museums. First, with new conceptions of what constitutes true liberal education and what is necessary to adjust individuals to occupy their proper places as citizens of an international community which must be reorganized on lines of peace, humanity, and justice in all nations, museums may be expected to play an ever larger and more active educational role. Second, with the technological advances which were already apparent before the war, and which have been accelerated during the war, we may expect peacetime applications in the field of museology, as in all other fields, which will greatly increase the usefulness of museums.

The imperative need for the extension and

broadening of education to equip men, women and children for true world citizenship as well as for making the most of their own individual lives, is even now being widely discussed, and its importance must be apparent to almost anyone who thinks. That museums have a place both in leadership and in execution of any such program is likewise apparent to all who realize a museum's proper functions.

The technological advances which may assist museums in spreading education will no doubt take many directions and forms, most of which cannot even be predicted as yet. There have been a few straws in the wind, however, for example, television, in which prior to the war Field Museum is proud to have pioneered. Only small scale experimentation was possible at the time, but the results pointed to a future in which the Museum, while still acting as host to millions of visitors entering its portals, may expect to enter the homes of tens of millions of others unable to come to it; and to reach repeatedly, many times each year, millions who might otherwise visit it only once in several years or a lifetime. I cite television as a technological advance which may have a profound effect upon the extension of the Museum's potentialities, because in this field we have already had definite evidence. But television is only one of the new mechanical means which our engineers and inventors may be expected to develop which will extend the usefulness of museums.

It seems certain that the Museum will become accessible to a world-wide public after the war. With the probability of universal use of the airplane as a transportation medium when peace has descended on the world again, it seems reasonable to expect that Field Museum will draw visitors in great number from countries throughout the globe.

PROBABLE EFFECTS OF THE WAR

The war itself is bound to have a profound effect upon both the thinking habits and living habits of all nations and nationalities. Its world-wide aspect has already broadened the horizons of most of us by arousing our interest in geography, history, cartography, logistics, ethnology, and many other subjects. Areas of the world formerly remote and little known are now arousing our curiosity and challenging our imaginations. The post-war period of world-wide rehabilitation will accelerate this interest

and curiosity. Our soldiers and sailors who are now having the exciting experience of seeing strange and exotic regions and races will, on their return, retain their world-wide interest and stimulate the interest of those who remained at home.

It is apparent that thinking people will turn more and more to the natural history museums in their quest for knowledge about races, regions and customs. Field Museum has always striven to bring a better understanding of the importance of nature study as an adjunct of our educational program. We have believed that the curricula of grade schools, high schools, colleges, and universities should put more emphasis on the study of natural history than has been the case in the past. The time has now come when educational leaders should give serious consideration to methods by which the great natural history museums can be made an active part of their educational machinery.

Field Museum is a microcosm of the basic realities of this world. Embraced within the scope of the four great natural sciences to which it is devoted—anthropology, botany, geology and zoology—are the fundamental elements of everything in life, and the causative factors that make people and other living things what they are. When we can master these things, if we can, we can master ourselves. The way to the kind of world understanding which we all realize is needed—an international understanding that will make for peace and justice and fairness between individuals and between nations—is through an understanding of the forces of nature, a comprehension of the distribution of natural resources, a knowledge of plants and animals, and, most important, an unprejudiced and undistorted view of the

character of other peoples, and of the effects of environment upon peoples. One of the things necessary to international understanding is a complete change in psychological approach with respect to the problems existing between peoples. But a prerequisite to attaining a proper psychological approach is an understanding of the truth about nature, and the corollary elimination of fallacies, misconceptions, and superstitions which all too often prevent us from solving problems. If, like the Nazis, we let racial prejudices blur our thinking, we shall never achieve any real solution of actual problems arising from racial differences, nor of economic, political, social and other problems either. But if we listen to the anthropologists, who can scientifically demonstrate that it is not color of skin, or type of hair or features, or difference of religion, that creates problems between peoples, but factors for which man is responsible and which he can control or change if he will, then we shall at least come within sight of that better world which we now realize we must achieve if we are not finally to perish as victims of our own perversity.

While writing a history of the fifty years' progress of Field Museum, and expressing my opinion as to what Field Museum's activities should be in the future, it seems to me not out of place to comment on the financial needs of the institution.

More money is the great need of Field Museum. This fact cannot be stressed too emphatically. It has been forcibly impressed upon those in charge of the administration of this institution throughout the last ten years. It is the outstanding consideration that confronts the Museum officials for the future.



"UNITY OF MANKIND"

An ideal for which we are now fighting, as expressed by Malvina Hoffman in the Hall of the Races of Man

INCREASED FUNDS NEEDED

More money to operate the Museum—

More money to enable it to carry on its share of expeditions, research, and the dissemination of knowledge to which it is entitled as a pre-eminent scientific institution—

More money to assure the maintenance of its enviable position among the great museums of the world—

More money to provide for an adequate staff and to pay adequate salaries.

The need of more money for these and countless other activities is incontrovertibly the crying problem of Field Museum.

A decrease in income during the past few years has become a serious menace to the further growth and development of this great institution. This decrease has occurred in nearly all sources of income, viz.: in the return from corporate investments, in revenue obtained from paid admissions, in sums paid for memberships, in contributions from friends.

The decrease in the return from corporate investments makes one ponder long as to what the future has in store for endowed institutions.

If Field Museum is to carry on its activities at full strength, and on a scale suited to its standing as an institution and to the importance of the great public and territory which it serves, it obviously must have large additions to its endowment funds.

There must be an ever-increasing membership supporting the Museum with contributions or annual dues.

And the Museum must be able to look to the public-spirited citizens of Chicago and the middle west, which it so well serves, for generous contributions.

Lacking increased income from all such sources, the Museum is faced with the prospect of a future situation which might lead to serious curtailment of all the important functions that it now fulfills with such success.

Men and Women Whose Contributions Have Made the Museum Possible

By
ORR GOODSON
Acting Director

When it is realized that the British Museum has been in existence for 190 years, that our own Smithsonian Institution was founded 108 years ago, and that the American Museum in New York is 74 years of age, Field Museum, now celebrating its fiftieth anniversary, seems by comparison a young institution.



Orr Goodson

It is probable that Founder Marshall Field and those other farsighted and civic-minded men associated with the Museum's birth never quite hoped that the Museum could in such a short space

of time achieve the outstanding position that it holds today—one of the four leading natural history museums of the world.

There are many factors that have contributed to the rapid growth of Field Museum. Possibly the most important one is the financial support that has been given by citizens of Chicago. Their contributions were made because these men and women believed that this city was destined to be a leading cultural and

educational center of the world. They believed in the work Field Museum was doing and the program it had outlined for the future. They were determined that all of Chicago and the surrounding territory should have the same advantages as the cities that were centers of population when Chicago was little more than a trading post on the shores of Lake Michigan.

The list of contributors is a long one, and one in which the Museum takes great pride. The generosity of Founder Marshall Field is well known to all who are familiar with the Museum. The tradition he began has been continued by his grandson, the present Mr. Marshall Field, who has contributed a total of \$2,822,000 up to this date. His beneficence, in addition to financing important expeditions and underwriting many of the Museum's most notable activities, has made possible the creation of the pension fund which provides for the financial care of all employees after they have reached retirement age.

PRESIDENT FOR 35 YEARS

Mr. Stanley Field has contributed a total of \$1,592,000. Like Mr. Marshall Field, he has given not only for the benefit and expansion



LONG LINES TREKKED ACROSS GRANT PARK FOR OPENING OF NEW BUILDING—MAY 2, 1921

of the Museum as an institution, but has considered the welfare of its employees. A large part of his gifts was made expressly for the establishment of the group life insurance arrangement which provides family protection for all employees if death occurs during their period of service, and throughout their lifetime if they serve until retirement in accordance with provisions of the pension plan. Of Mr. Field's contributions, approximately \$838,000 was given to meet a deficit in the funds for construction of the present building.

The contributions of Mr. Marshall Field and Mr. Stanley Field cannot be measured in money alone. Mr. Marshall Field has been an active member of the Board of Trustees since 1914, and has given time and effort to Museum activities, and highly esteemed counsel in the deliberations of the Board. Mr. Stanley Field has served as President of the Museum for the past thirty-five years. His constant interest in and able administration of the affairs of the Museum have been among the chief factors responsible for attainment of the eminent position the institution occupies today. This Museum has indeed been singularly fortunate in having such an able administrative head.

OTHER GREAT NAMES

There are other famous Chicago people whose financial support has contributed much to the success of the Museum during its first fifty years. The late Norman Wait Harris gave \$250,000 to establish the N. W. Harris Public School Extension of Field Museum. This has been supplemented by contributions of \$255,000 from his son, Mr. Albert W. Harris, and additional sums from other members of the

family. Mrs. James Nelson (Anna Louise) Raymond has given \$587,000 in the name of her late husband and herself for the establishment and support of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Among the many others who have given notable sums are: the late Edward E. Ayer, who gave \$314,000; the late Miss Kate Buckingham, \$106,000; the late William V. Kelley, \$157,000; the late Martin A. Ryerson, \$211,000; the late Mrs. Carrie T. Ryerson, \$337,000; the late George M. Pullman, \$100,000; the late James Simpson, \$183,000; the late Mrs. George T. (Frances Ann Gaylord) Smith, \$262,000 in her own and her husband's name; the late R. T. Crane, Jr., \$120,000; Mr. Cornelius Crane, \$109,000; the late Frederick H. Rawson, \$101,000; the late Ernest R. Graham, \$131,000; Mrs. Diego Suarez, \$230,000; the late Joseph N. Field, \$50,000; the late Mrs. Mary D. Sturges, \$50,000; Mr. Philip M. Chancellor, \$88,000; the late Chauncey Keep, \$50,000; the late Mr. and Mrs. Julius Rosenwald, \$77,000, and the late Harlow N. Higinbotham, \$100,000.

Because of space limitations, each of the contributors cannot be mentioned individually in this article. However, a list of other contributors of large sums and the amounts given will be found on the following page. Field Museum gratefully acknowledges the gifts of all contributors, large and small, and it should be emphasized that the Museum appreciates the sincerity and interest of the donors of small sums as greatly as it appreciates the more substantial gifts. This applies particularly to those thousands of people who have supported the Museum by maintaining memberships.

Others Who Have Contributed to Field Museum

In addition to the Benefactors and Contributors mentioned in Acting Director Goodson's article on the preceding page, the following persons and organizations have made notable gifts to the Museum, and in recognition have been elected as Contributors, a Membership classification defined in the Museum By-laws as including all those whose gifts in money or materials range in value from \$1,000 to \$100,000:

<i>\$25,000 to \$50,000</i>		
Adams, Mrs. Edith Almy*	Reese, Lewis*	Ream, Norman B.*
Blackstone, Mrs. Timothy B.*	Robb, Mrs. George W.*	Revell, Alexander H.*
Coats, John*	Rockefeller Foundation, The	Salie, Prince M. U. M.
Crane, Charles R.*	Sargent, Homer E.	Sprague, A. A.*
Crane, Mrs. R. T., Jr.	Schweppe, Mrs. Charles H.*	Storey, William Benson*
Field, Mrs. Stanley	Straus, Mrs. Oscar	Strawn, Silas H.
Jones, Arthur B.*	Strong, Walter A.*	Thorne, Bruce
Murphy, Walter P.*	Wrigley, William, Jr.*	Tree, Lambert*
Porter, George F.*		Valentine, Louis L.*
Vernay, Arthur S.	<i>\$5,000 to \$10,000</i>	<i>\$1,000 to \$5,000</i>
White, Harold A.	Adams, George E.*	Avery, Miss Clara A.*
	Adams, Milward*	Ayer, Mrs. Edward E.*
	American Friends of China	Barrett, Samuel E.*
	Avery, Sewell L.	Bensabott, R., Inc.
	Bartlett, A. C.*	Bishop, Dr. Louis B.
	Bishop, Heber (Estate)	Blair, Watson F.*
	Borland, Mrs. John Jay*	Blaschke, Stanley Field
	Crane, R. T.*	Block, Mrs. Helen M.*
	Doane, J. W.*	Borden, John
	Field, Dr. Henry	Brown, Charles Edward
	Fuller, William A.*	Chicago Zoological Society, The
	Graves, George Coe, II*	Coburn, Mrs. Annie S.*
	Harris, Hayden B.	Crocker, Templeton
	Harris, Norman Dwight	Cummings, Mrs. Robert F.*
	Harris, Mrs. Norman W.*	Doering, O. C.
	Hutchinson, C. L.*	Fish, Mrs. Frederick S.
	Keith, Edson*	Graves, Henry, Jr.
	Langtry, J. C.	Gunsaulus, Miss Helen
	MacLean, Mrs. M. Haddon	Hibbard, W. G.*
	Moore, Mrs. William H.	Higginson, Mrs. Charles M.*
	Payne, John Barton*	Hill, James J.*
	Pearsons, D. K.*	Hixon, Frank P.*
	Porter, H. H.*	Hoffman, Miss Malvina
		Hughes, Thomas S.
		Jackson, Huntington W.*
		James, F. G.
		James, S. L.
		Knickerbocker, Charles K.*
		Lee Ling Yün
		Lerner, Michael
		Look, Alfred A.
		Mandel, Fred L., Jr.
		Manierre, George*
		Martin, Alfred T.*
		McCormick, Cyrus H.*
		McCormick, Mrs. Cyrus*
		Mitchell, Clarence B.
		Ogden, Mrs. Frances E.*
		Osgood, Dr. Wilfred H.
		Palmer, Potter
		Patten, Henry J.*
		Prentice, Mrs. Clarence C.
		Rauchfuss, Charles F.*
		Raymond, Charles E.*
		Reynolds, Earle H.
		Rumely, William N.*
		Schapiro, Dr. Louis*
		Schwab, Martin C.
		Schweppe, Charles H.*
		Shaw, William W.
		Sherff, Dr. Earl E.
		Smith, Byron L.*
		Sprague, Albert A.
		Thompson, E. H.*
		Thorne, Mrs. Louise E.
		VanValzah, Dr. Robert
		VonFrantzius, Fritz*
		Wheeler, Leslie*
		Willis, L. M.

* Deceased

The Departments Tell Their Story

FIFTY YEARS OF ANTHROPOLOGY

By PAUL S. MARTIN

CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

The Department of Anthropology, along with the present Departments of Botany, Geology and Zoology, was inaugurated in 1893, and was a direct outgrowth of the Department of Ethnology of the World's Columbian Exposition of 1893.

Much of the material now in the possession of this department was acquired from the exposition or from the exhibitors, by gift and purchase. These acquisitions, collected from many parts of the world, formed the nucleus of the original exhibits. While the primary acquisitions are still valued as collections of materials in bulk, from the modern point of view they leave much to be



Paul S. Martin

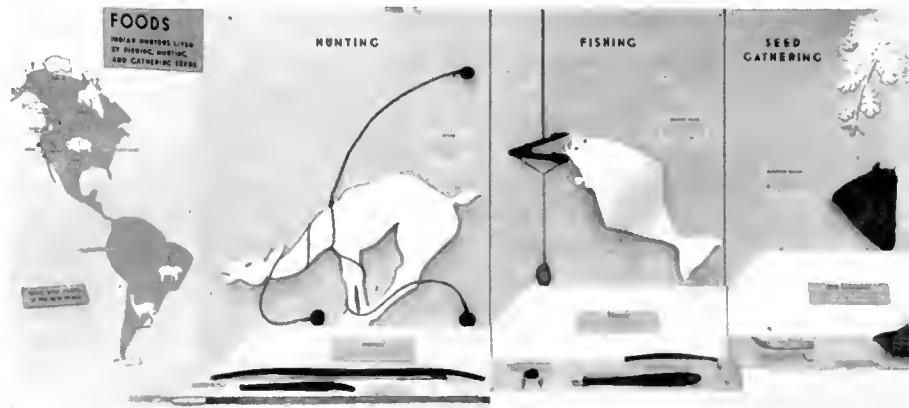
desired. For the most part, the specimens gathered for the exposition were collected hurriedly and without much regard for accompanying data such as what the specimens were used for, what meaning they had to the owners, and other historical information. Therefore, the early collections gathered for the exposition are not so valuable as they might have been.

The first Chief Curator of the Department, from 1894 to 1897, was Dr. W. H. Holmes, who had been associated with the exposition. When Dr. Holmes took charge, he had the difficult task of creating a well-defined department out of a mass of heterogeneous, uncatalogued material which poured into the Museum after the close of the exposition. He successfully discharged this duty in a very short time. Immediately after the Museum was formally opened, Dr. Holmes also organized several expeditions to collect more specimens which were needed to fill gaps. He led an expedition to Mexico, the results of which were embodied

in a scholarly report published by the Museum. In 1897 Dr. Holmes resigned to accept a post at the United States National Museum.

Dr. George Dorsey, who had joined the staff of the Museum in 1896, succeeded Dr. Holmes as Chief Curator of the Department. Dr. Dorsey had been associated with the exposition as a leader of collecting expeditions. Under his vigorous leadership, the department expanded greatly. Expeditions were sent out to various parts of the world. From these expeditions, covering a period of sixteen years, a tremendous number of specimens were collected. As a result of all these activities, the exhibition halls were rapidly filled with materials which cannot now be duplicated; and many noteworthy monographs were published by the Museum. This was undoubtedly the greatest period of expansion that this department has ever experienced.

After Dr. Dorsey's resignation in 1915, Dr. Berthold Laufer was appointed Chief Curator of the Department. Dr. Laufer had been a member of the Museum staff, in charge of Asiatic Ethnology and Archaeology, since 1907. During that time he conducted several



NEWEST TYPE OF ANTHROPOLOGY EXHIBIT—HALL B

highly successful expeditions to the Far East.

The appointment of Dr. Laufer to the staff, and later as Chief Curator of the Department of Anthropology, was an especially happy one. His interest centered primarily in research, and, as a result of his stimulation, more scientific papers were published during his nineteen years as head of the department than ever before. Likewise, during his curatorship,

many expeditions were sent into the field, the exhibits were all completely revised, and many new collections were purchased.

Under Dorsey the department had rapidly expanded; but under Laufer's leadership it became distinguished more especially for scholarship and research.

In previous regimes, some of the leaders of expeditions had been wont to collect furiously and without much thought or selectivity. In a way, this is understandable, because the department was young and had many gaps to close and large halls to fill. But under Laufer, things were different. Collecting was done on a more judicious basis, and emphasis was not on collecting *per se*. Laufer believed that specimens without complete documentation and history were valueless, and that collectors who failed to achieve at least these minimal requirements were no more professional than stamp or arrowhead collectors. They were merely antiquarians.

To Laufer goes credit for placing the department on a scientific basis, for bringing great distinction and honor to the Museum both because of his own high scholarly achievements and because of the work he inspired his staff to accomplish; and for creating a tradition in museology and anthropology. His premature death in 1934 was a blow to the Museum.

The last nine years have brought about profound changes in our outlook concerning the Museum and the place of anthropology in the world today.

For one thing, we are no longer interested in expeditions which collect well-documented materials. We are interested in obtaining information about the totality of a given culture—tangible and intangible facts; material and non-material aspects of a culture; data on language, physical types, ecology, arts and crafts, religion, mythology, history, techniques, and economy.

And why are we interested in studying past and present cultures?

Anthropology, although a young science, is one of the most important to the world today. So much is known of the world apart from man, while comparatively little is understood about man himself and his psychological makeup. And it is about his relation to other men that the average man knows least—a fact which is responsible for most of our present world difficulties.

The anthropologist, using psychology and other helpful disciplines, is interested in investigating and clarifying man's social relationships. What happens when two races and two differing cultures meet? No proper solution of the world's problems and psychoses can be made without the aid of anthropological studies.

GREAT STRIDES MADE IN BOTANY DURING FIFTY YEARS

By B. E. DAHLGREN

CHIEF CURATOR, DEPARTMENT OF BOTANY

At the World's Columbian Exposition many nations were represented by displays of agricultural and forestry products that constitute their main natural wealth. The aggregate of such material was very great. There were woods, rattans, lacquers, dyes, gums, resins, starches, oils, and medicinal plants of India, Johore, and Siam; agricultural products, and an exemplary collection of the woods of Japan; the agricultural products of Russia; Spanish olive oil and cork; grains, oils,



B. E. Dahlgren

waxes, gums, fibers and woods from Mexico, Costa Rica, Jamaica, Trinidad, Colombia, Ecuador, and almost all other South American countries. Brazil alone sent a thousand specimens of its tropical woods and almost as many other botanical items from its immense rainforests, plains and semi-deserts. In addition there were products exhibited by the United States Department of Agriculture—crop-plants, cotton and other fiber plants, tobacco, and a great variety of woods.

The assembling and preparation of these many items had obviously cost much time and planning, and the work of hundreds of men. When the idea of a permanent depository and exhibit was realized with the founding of Field Museum, all this material was freely contributed. The new Museum was thus provided with a huge nucleus for botanical collections. Perhaps never before had such an array of diverse vegetable material been brought together under one roof.

The vast accession, much of it perishable, brought an immediate problem of care and

preservation. Dr. C. F. Millspaugh, well known for his *Medicinal Plants of the United States*, assumed, as Curator of Botany, the responsibility for technical organization.

Such is briefly the origin of the Department of Botany. The first and provisional arrangement preserved the original collections intact, and was thus geographical. With a scarcity of exhibition cases, the installation required much work and ingenuity. It soon became apparent that the collections left much to be desired, both as to quality and accompanying data. For example, it was evident that only a new and authentic collection of North American woods could be satisfactory, with material of definite size and proportions accompanied by botanical data, photographs, and herbarium specimens. The Curator accordingly initiated a program of collecting later carried on by a special forestry assistant, out of which grew the present Hall of North American Woods.

Serviceable exhibition cases were designed and provided, and the geographical grouping was gradually superseded—except in the section of foreign woods—by a botanically more logical arrangement according to plant families. Years of work resulted in a well-arranged exhibit of plant products with botanical features illustrated by dried material and pictures.

SPECIAL TECHNIQUE DEVELOPED

The unsatisfactory appearance of dried plants has always presented a problem in Museum technique, sufficiently troublesome in most cases to deter natural history museums from concerning themselves with plants, except incidentally and most casually. After some early experimental attempts to provide accurate and life-like replicas of plants for the exhibits, funds were supplied for this purpose during many years by President Stanley Field who thus made it possible to represent a great diversity of plant-forms. Additions to these are constantly being made by the few expert technicians and artists now occupied with this work. The coal forest reconstruction in the geological exhibits, the Illinois woodland, and the intertidal seaweed scene in the Hall of Plant Life (Martin A. and Carrie Ryerson Hall) are recent outstanding achievements.

After transfer of the Museum to its present building, a single hall was made to serve for the systematic botanical display, the remainder



MAINE COAST SEAWEEDS—HALL 29

of the space available being devoted to plant products, food materials, industrial raw materials, foreign and domestic woods.

The first opportunity for field work came in the first year of the existence of the Museum, when Mr. Allison Armour invited the Curator of Botany to participate in a cruise to Yucatan. This resulted in collection of the first specimens gathered for a herbarium and yielded material for the first Field Museum botanical publication. Other expeditions to Yucatan, the Bahamas, and the larger Antilles provided further collections. With gifts of plants—one of the earliest being credited to Mr. Martin Ryerson—and many purchases from private collections, the herbarium grew, slowly at first, then more rapidly with the acquisition of many important private American and a few European collections. The transfer to the Museum in 1907 of the University of Chicago herbarium, brought together by Professor John M. Coulter, added 50,000 to the 200,000 specimens of all kinds then catalogued. It has since become an integral part of the botanical collections that now comprise more than a million items. About half this number, perhaps the most valuable part, has resulted from Museum botanical expeditions to tropical America, Peru, British Guiana, Brazil, Venezuela, Mexico, and Guatemala. Tens of thousands of herbarium specimens have been obtained by exchanges and in return for determinations made by our own staff.

A ten-year search for type specimens in the botanical collections in Europe, almost completed by a member of the staff before the present war, furnished more than 40,000

photographic negatives and a large number of duplicates and fragments from the collections of early botanical explorers of the American tropics. These now constitute one of the most important parts of the department's reference collections. Photographic prints of these types have been supplied to many other institutions.

A special herbarium of lower plants has been organized in recent years and therewith the care of fifty years' accumulation of algae, hepatics, mosses, lichens and fungi—including the large Harper collections of fungus and lichen acquired by gift—has been placed, like the herbarium of flowering plants, in the competent hands of a specialist.

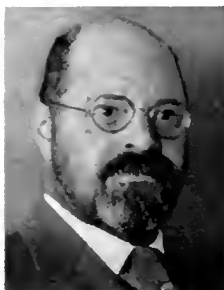
Thanks to the industry of the staff of the department, its publications are voluminous, ranging from popular leaflets to important technical contributions to scientific literature. Outstanding unfinished works in progress include a *Flora of Peru* by J. Francis Macbride, and a *Flora of Guatemala* by Paul C. Standley and Dr. Julian A. Steyermark. Both of these works, including many sections contributed by other specialists, are based chiefly on collections obtained by a series of Field Museum expeditions.

FIFTY YEARS OF MINERALOGY AND PALEONTOLOGY

By HENRY W. NICHOLS

CHIEF CURATOR, DEPARTMENT OF GEOLOGY

To a geologist, of course, a million, or even a hundred million years is only a short time—since we deal (like astronomers, and some politicians) in figures running into billions. Thus, fifty years to one in this department, regarded



Henry W. Nichols

from the purely scientific point of view, is but a fraction of a second in geological time. But to us as individual human beings, fifty years is just as long as to anyone else.

I came to Field Museum as Curator of Economic Geology in July, 1894, two months after the opening day, and eight months after the first specimens were brought into the building. The department staff then consisted of a Curator of Geology, the late Dr. Oliver C. Farrington, and myself. The only

assistant was a label writer, who wrote labels for the specimens with India ink on buff cardboard. This force was obviously inadequate, and has since been gradually enlarged until now there are six curators and assistant curators and seven preparators and other assistants.

OLD CASES INADEQUATE

The specimens which came by gift and purchase from the World's Columbian Exposition were more than ample to fill the exhibition space of the twenty-one halls assigned to the department. Most of them had been numbered and roughly catalogued in temporary



METEORITE AS EXHIBITED IN THE '90's

books. I found all twenty-one halls installed, although in a few of them the installation was little better than orderly storage.

The specimens were displayed in crude, cheaply built cases obtained from the exposition. The only exception was the gem collection in H. N. Higinbotham Hall, which was installed in well-built cases of as good design as any of that period, although not to be compared with those of the present installation. These cases, however, were far from dust-proof, and much of the time of the two curators was taken up with attempts to keep the specimens reasonably neat and clean. Cases had not been provided for some of the large specimens, and these were displayed on platforms placed either in the center of the halls or against the walls.

The collections were classified into the same sections—paleontology, mineralogy, etc.—that appear in the present installation, plus an addition of a section of metallurgy which has since been discarded. Twelve of the twenty-one halls, more space than at present, were assigned to economic geology. The weakest



RESTORATION OF MESOHIPPIUS, AN EXTINCT THREE-TOED HORSE—HALL 38

section was that of vertebrate paleontology which, although it contained much excellent material, failed lamentably to illustrate its field. So great and so numerous were the gaps that, in 1898, Mr. Elmer S. Riggs (who retired only a few months ago) was appointed Assistant Curator (and later Curator) of Paleontology, and he began the expeditions which have enlarged the collection into one of the greatest in the country. The invertebrate paleontology collection contained thousands of specimens and was especially strong in European material, yet there were many serious gaps which have since been filled by collecting and by gifts.

The mineral collection was large and excellently installed, although the poor furniture in which it was placed and the hand-written labels seriously detracted from its appearance. Both in quantity and quality it was much inferior to the present display. The meteorite collection contained examples of 180 falls, and numerous casts of specimens. As the latter attracted little attention, they have been withdrawn to make room for more meteorites. At that time it was considered a large collection, although small compared with the 826 falls represented in the present exhibit. This collection so interested Dr. Farrington that he made an intensive study of meteorites which continued over many years until he became one of the world's leading authorities on the subject. To facilitate his studies, a well-equipped chemical laboratory was soon provided where the Curator of Economic Geology spent much time analyzing meteorites.

The collection of ores was large and probably more complete than the collection in any

other museum, but the installation needed drastic revision—a task that required several years of hard work. The collection of industrial minerals was large and inclusive, but the drab installation robbed it of its full interest. However, even in its first year the collection, in spite of crudities of installation, took its place among the greater and more complete geological exhibits of the country. It was at once realized by the staff that great improvements in the installation were needed if the exhibit was to have the attractive appearance and educational value it should have, and the planning of an improved installation has occupied much of the time of the curators ever since. The old cases from the World's Fair were gradually replaced by better ones, and many of these in turn have later been replaced by still better types. The hand-written labels were soon replaced by printed ones, and better methods of supporting specimens in the cases were devised. Additions from expeditions, gifts and purchases have so enlarged and improved the collections that they are now far more extensive and valuable than in those early days.

RECENT REORGANIZATION

After some years it gradually became apparent that the exhibit appealed more to the scientist than to the general public. In an endeavor to make the exhibit as complete as possible, the cases of the early installation had been overcrowded with specimens, and each subject was illustrated in the greatest possible detail. The result was overloaded cases producing a monotonous aspect which served to

(Continued on page 20)



*Snow Leopard of
the Himalayas*

William V. Kelley
Hall (Hall 17)

The color photographs reproduced on this page, showing
were made by Mr. Clarence B. Mitchell as Research
selected from 43 such plates

*Cut and
Polished Nodule
of Copper Ore*

Hall of Minerals,
Crystals and
Meteorites (Hall 34)





*Restoration of
Swiss
Lake-Dwellers
(Neolithic Period)*

Hall of the Stone Age
of the Old World
(Hall C)

... exhibits in the various departments of Field Museum,
... sociate in Photography at Field Museum. They are
... te book *Exploring Field Museum*.



*Restoration of
an Illinois
Coal Age Forest
of 250,000,000
years ago*

Ernest R. Graham Hall
(Hall 38)

MINERALOGY AND PALEONTOLOGY

(Continued from page 17)

confuse and tire the average visitor rather than entertain and instruct him. This trouble was overcome to some degree by improved arrangement, reduction of the overcrowding, and the addition of dioramas and explanatory labels. It finally became evident that if the collection was to have a proper appeal to the public a further drastic reorganization was



EARLY MINERALOGY EXHIBIT

called for. Plans were prepared for this and a complete reinstallation has now begun. Under the new plan, each subject is illustrated by fewer specimens which demonstrate simply and plainly its essential features. Installations, too, are designed in a far more attractive manner. The multitude of specimens necessary to illustrate fully details that are of great importance to the scientist but of little interest to the average visitor have been transferred to a study collection not open to the general public. There they can be better studied by scientists or others who have real need to consult them, with the additional advantage that they may be handled as they could not if on public exhibition.

Owing to interruptions from the war, the current reinstallation has barely begun, but examples may be seen in the industrial mineral exhibit in Hall 36 and in the vertebrate paleontology collection of Ernest R. Graham Hall (Hall 38) where the rearrangements are well advanced. When normal times return, reinstallation work will be resumed on an intensive scale which, it is hoped, will further improve this department.

FIFTY YEARS OF ZOOLOGY

By KARL P. SCHMIDT

CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

The Department of Zoology has grown from an original staff of four to twenty-seven, from limited exhibits of poor quality to a wealth of the finest modern preparations, from a few thousand research specimens to hundreds of thousands, and from Publication No. 1 to shelves of volumes embodying fifty years' research. Ward's Natural Science Establishment collection, valued at \$100,000, after exhibition at the World's Fair of 1893, formed the nucleus of the Museum collections. Included were numerous rare animals, but as the taxidermy was old-fashioned, replacement and remounting was immediately begun. Field Museum took an extremely important part in the development of taxidermy as an art after the arrival (in 1896) of Carl E. Akeley. During Akeley's twelve years of service, he made two expeditions to Africa, and after perfecting his sculptural methods in taxidermy, turned out a whole series of superbly mounted African animals. His contribution to the modern "habitat group" idea, in



Karl P. Schmidt

NO EXHIBITS LIKE THIS TODAY



which animals are shown with a reproduction of the terrain and vegetation in which they naturally live, was of first rate importance. On his departure in 1909 he left a tradition of high standards, trained associates, and most important of all, of experiment and invention.

Other significant contributions to museum techniques have been made by members of the Museum staff—by Julius Friesser for large mammals, by Leon L. Pray especially for fishes, and by Leon L. Walters in the invention and perfection of the celluloid technique for making models of reptiles and hairless mammals. The late Charles A. Corwin's special talent for painting panoramic large-scale landscapes as backgrounds for habitat groups seems to have been discovered by Akeley; Arthur G. Rueckert is his able successor in this department of mural painting. More recently, the trend in the exhibition program has turned to the explanatory and subjective kinds of exhibit, such as evolutionary diagrams, models to show significant anatomical features, and enlarged models of microscopic creatures which can only thus be brought within the scope of vision.

Research in zoology, though often carried on as an independent activity of the Museum, is intimately related to exhibition in a museum large enough to maintain collections and exhibits of world-wide scope. Research began with the appointment of a scientific staff of four—D. G. Elliot as Curator, O. P. Hay as Assistant Curator, and in a separate Department of Ornithology, Charles B. Cory as Cura-

tor and George K. Cherrie as Assistant Curator. The first zoological publication was by Hay, on the anatomy of the remarkable local fish, the bowfin. The first zoological expedition was by Cherrie, to the island of Santo Domingo. The first notable addition to the research collections was the Cory Collection of West Indian birds.

The research collections have grown steadily, by accretion from small gifts and purchases, through expeditions to every continent, and by the purchase and presentation to the Museum of notable private collections, such as the Strecker Collection of moths and butterflies in 1908; the Bishop Collection of birds in 1939; the Webb Collection of shells in 1941, and a notable collection of beetles in 1943. Through all sources, the research collections now number approximately 200,000 specimens of lower invertebrates; 400,000 insects and allies; 150,000 fishes; 50,000 amphibians and reptiles; 190,000 birds; and 53,000 mammals (including skeletons).

Expeditions, while often devoted primarily or wholly to collecting for exhibition, have also been planned in the interests of research, resulting in many discoveries and additions to knowledge. The Museum's more important foreign zoological expeditions have been to Africa (six), to Asia and the Pacific Islands (six); Labrador and Greenland (two), and to tropical America (sixteen).

The growth of the staff, with the interesting personalities inevitably assembled in a museum



MODERN HABITAT GROUP—AFRICAN WATERHOLE, AKELEY HALL

of natural history, would form an absorbing chapter in the history of museums in America. C. B. Cory followed Elliot as Chief Curator of the consolidated department in 1906; he was succeeded in 1921 by Dr. Wilfred H. Osgood, who had been a member of the staff since 1909. On Dr. Osgood's retirement in 1940, he was followed by the writer, previously the Curator of Reptiles. Through the several regimes of the department, Mr. W. J. Gerhard, Curator of Insects since 1901, has rendered invaluable aid as unofficial assistant to the Chief Curator. The department is now organized into seven divisions, with their respective curators. Since no museum, however wealthy, could maintain specialists for the entire animal kingdom, it is important that Field Museum should turn to amateur and professional research associates for the study of its collections and for advice on problems of exhibition. Such associates now number six.

Building upon the beginnings in our fruitful first fifty years of exhibition, education, and research, there lies before us a great future program for a still more comprehensive presentation of the beauty and significance of the animal kingdom.

SOME NOTES ON THE HISTORY OF THE HARRIS EXTENSION

By JOHN R. MILLAR
CURATOR, HARRIS EXTENSION

A consideration of earliest beginnings, like the determination of first causes, brings one to the borders of the metaphysical. Whether the beginning of the N. W. Harris Public School Extension dates from 1911 when the late Norman Wait Harris gave the fund that made the Extension possible, or from some earlier time when Museum Trustees and President Stanley Field received the idea that an extension service was a proper enter-



John R. Millar

prise for Field Museum, or from 1912 when a Curator was appointed, is a moot question of no great consequence.

Whatever date one chooses, a background of experience in similar extension services had already been provided by institutions of other

cities. Early in 1912, a special committee of eight persons (four from the Museum staff and four from the Chicago school system) investigated methods employed elsewhere. The report of the committee, submitted jointly to the Director and Trustees of the Museum, and to the Superintendent of Schools of Chicago, outlined the plan of organization and the broad objectives that have guided operations since.

OTHER DEPARTMENTS CO-OPERATE

With the appointment of the late Stephen C. Simms, then an Assistant Curator in Anthropology, as Curator of the Extension, a staff was assembled and the work of preparing exhibits soon began. The immediate task was to gather exhibits sufficient to inaugurate the loan service to schools, and to standardize equipment and methods to permit its rapid expansion.

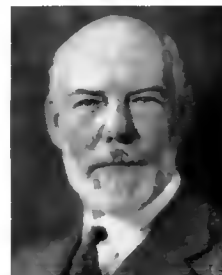


Norman Wait Harris

In the solution of the latter problem, Mr. Valerie LeGault, a skillful and resourceful carpenter-preparator in the Department of Geology, must be given chief credit. The portable case he designed is essentially the same as is being used today, and a superior type of case for the purpose is yet to be devised. Similarly, the four scientific departments of the Museum co-operated by furnishing surplus materials and performing numerous services to launch the fledgling Extension.

By the end of 1913 eighty portable exhibits were available, and seven schools had made use of part of the material for two-week periods. During 1914, 207 additional exhibits were prepared, a delivery truck was acquired, and 326 schools were reached. From this point on, there was a gradual increase in the number of exhibits available, and in the number of schools borrowing them.

In its infancy the Harris Extension received considerable aid from other Museum departments, but it soon became self-sufficient. Staff members early began to do their own collecting and preparing of specimens. Some rare and



Albert W. Harris



examples of his skill as collector and taxidermist, and talent as artist, endure among collections being circulated in the schools.

Mr. Stephen C. Simms was Curator of the Harris Extension from 1912 until 1928 when he became Director of the Museum, and he actively supervised the department until his death in January, 1937. Although Mr. Simms had the loyal, competent help of many

THROUGH THE HARRIS EXTENSION, EXHIBITS LIKE THIS

unfamiliar forms, such as the Arctic three-toed woodpecker, are present in the Extension's collections largely through the activities of Mr. Herbert L. Stoddard, one of the earliest preparators in the department.

The methods of preparation and quality of workmanship employed in producing school exhibits paralleled the development of museum techniques in general, and in at least one instance made a contribution. Mr. Leon L. Walters, now a staff taxidermist in the Department of Zoology, and renowned as the inventor of the famed Walters' "celluloid" process for the production of well-nigh perfect models of amphibians, snakes, and other types of animals that had previously defied the efforts of taxidermists to achieve life-like results, did his early experimental work while employed in the Harris Extension. His first successful work was the production of feet for mounts of the 13-lined ground squirrel, or gopher. Celluloid casts of snakes were a logical development in the application of the process, and several such specimens were made for school exhibits. These earliest examples of the Walters technique are still in good condition after more than twenty years of service under conditions much more severe than those that are encountered in Museum exhibition halls.

Mr. Arthur G. Rueckert, present Museum Staff Artist engaged principally in painting backgrounds for large habitat groups, also began his Museum career as a taxidermist in the Harris Extension. Numerous



. REACH EVEN CRIPPLED YOUNGSTERS



. ON REGULAR SCHEDULE

individuals, such as Mr. Albert B. Wolcott, who was Assistant Curator until his retirement in 1942, the large measure of success that has crowned the work of the department is the result of his skillful, devoted direction of its activities.

Today the Harris Extension has more than 1,100 portable exhibits, and is currently lending them on regular schedule to nearly 500 schools and other educational and social agencies of Chicago. The quality of these exhibits is nowhere surpassed by similar material, and the plan of distribution is believed to be the best compromise with a difficult problem. Nevertheless, all that has been done must be regarded as only preparatory to a new period of increased usefulness in enriching the experience, and thereby contributing to the education, of Chicago's young people.

MUSEUM STAFF LECTURERS FILL A VITAL PUBLIC NEED

By MIRIAM WOOD

CHIEF, RAYMOND FOUNDATION

Fifty years ago, visitors who entered Field Museum looked at the exhibits at their leisure; they read the labels, looked back at the exhibits, wondered a bit about many things and continued on their way. There were no tours conducted by guide-lecturers to help explain the material on exhibition. Groups of school children came in and the teachers tried to explain and relate the exhibits to the things the children were studying in school. In the Museum the children could actually see these things, and thus the exhibits meant more to them than mere classroom reading. It was almost like taking a journey around the world, or back into early civilizations and prehistoric times. This was a new kind of school room where geography, history, and science lessons came to life.

It soon became generally known among the schools in the Chicago region that there were many worth-while things in this new Museum, not just curiosities. In fact, some teachers believed that an hour spent in the Museum was worth more than an hour over a text book.



Miss Miriam Wood

For many years these early teachers used the Museum exhibits without much help from the Museum, but they had so many things to learn as well as to teach that they could not possibly discover all the interesting stories and facts about these exhibits. Occasionally the Museum staff men would talk to the students, but finally requests for such help became so numerous that the scientists could not cope with this problem unless they were virtually to abandon their other duties. Therefore, after twenty-eight years, the first guide-lecture division was established on February 15, 1922, with one guide-lecturer. It was her duty "to conduct school children, clubs, societies and other visitors through the Museum halls, and to give information and lectures on the various exhibits."

After this beginning, it was decided to develop a program of lectures, tours and entertainments for children from the elementary schools, and to follow closely the courses of study used in the schools. School superintendents and teachers were consulted in making plans to provide the most beneficial use of the Museum for the children.

In the following year (1923) the first free entertainments were presented for children.



Mrs. James Nelson
Raymond

CHILDREN ARE MUSEUM'S MOST RAPT VISITORS





EACH AUTUMN THE "4-H CLUBS" SEND SELECTED RURAL YOUTH TO FIELD MUSEUM

These were mainly motion pictures, and as at that time there were few such programs in Chicago, this activity met a great need; in fact, one of the early programs attracted more than 5,000 children in one morning. Then as now they filled the Museum halls, and their comments, questions, and laughter could be heard from one end of the building to the other.

Further developments followed quickly. Short stories for children were published and presented to each child attending the entertainments. Extension lecture service was developed to take the Museum into the schools by means of illustrated lectures. It was at about this time (1925) that Mrs. James Nelson Raymond became interested in the work for children in the Museum and provided an endowment to develop and broaden the program started in 1922. The guide-lecture division then was named, in honor of her and her husband, the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

With this assistance, the Raymond Foundation grew rapidly. More lecturers were added to the staff, new programs were presented, and old ones were enlarged. Today the Foundation presents radio programs, nature courses for group leaders, nature lectures in near-by camps, radio-follow-up programs, television programs, training courses for science teachers, special programs for science classes, courses for recreation leaders, and, most recently, series of lectures on "The Backgrounds of the War."

The Raymond Foundation staff now consists of six members, each qualified in a particular branch of science and trained to talk and work with people, especially children. The purpose of this Foundation has not changed materially from that with which it started: "To make

the most use of the Museum exhibits by interpreting them to the people, especially to children." Today, we stress the idea of using and presenting this great storehouse of material and information at the time it is most needed and wanted by the people. New lectures, tours, and other types of programs are constantly being developed, and changes are made according to the current needs.

LIBRARY PLAYS IMPORTANT PART IN PROGRESS OF MUSEUM

By EMILY M. WILCOXSON
LIBRARIAN

From the beginning, it was realized that a natural history museum in which research was to be an important function would require a comprehensive library as one of its prime essentials. Such a library, therefore, was definitely organized as early as January, 1894, and it has grown to be one of the largest collections of books and pamphlets in its specialized fields to be found in the entire middle western area.



Mrs. Emily M.
Wilcoxson

At the start, as in other departments of the Museum, the nucleus of the collections came from the World's Columbian Exposition. Important accessions from this source included the Kunz Collection, comprising 6,300 publications on geology, gems, and metallurgy, a collection of nearly 1,400 ethnological volumes, and some 360 books from the United States Bureau of Mines.



NEW READING ROOM—A PLEASANT PLACE TO BROWSE

Mr. Edward E. Ayer, first President of the Museum, contributed the famous ornithological collection which he had assembled, and throughout his life continued to make additions to it. An outstanding feature was his set of the original edition of the Audubon paintings. He presented also the Robert Clarke Piscatorial Library of 1,640 volumes, including eighteen original editions of Izaak Walton's *Compleat Angler*, published in the fifteenth and sixteenth centuries. Another outstanding early acquisition was a collection of 587 ornithological books assembled by Mr. Charles B. Cory, former Curator of Zoology.

One of the most unusual collections to be found in any library is that of some 11,000 volumes bequeathed to the Museum by the late Berthold Laufer, former Curator of Anthropology, at the time of his death in 1934. It consists chiefly of rare Chinese books and books about China, as well as Tibetan, Manchu and Mongolian books and manuscripts of great historical value and of unusual importance to those engaged in research in this field.

President Stanley Field is the donor of many books in which the Library staff has special pride. These include rare volumes on early travels and history, some of which date as far back as the fifteenth and sixteenth centuries.

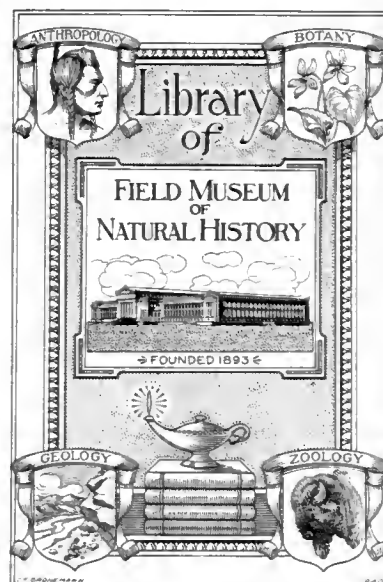
EXCHANGES WITH OTHER INSTITUTIONS

The Library is indebted to many members of the Museum staff, past and present, for important contributions to its collections, as well as to thousands of friends outside—scientists all over the world, Members of the

Museum, other museums, libraries, universities, and other organizations. A particularly rich source for enlargement of the Library's resources has been the system of exchanges in operation between museums, libraries, scientific publishers, authors, and the like. Purchases of important works, both old and current, have also been made regularly each year to keep the collection of reference works, current scientific periodicals, and other publications abreast with the times.

The first Librarian was Mr. Edward Burchard, who was succeeded by Mr. Juul Dieserud. The latter arranged and catalogued the first books received from the World's Columbian Exposition. On his retirement in 1900 he was succeeded by Miss Elsie Lippincott, who served efficiently and faithfully until her retirement in 1930.

In order to provide the greatest service to members of the scientific staff, a large part of the Library's collections has been placed in departmental libraries. The facilities of both the main and departmental libraries are open to students, teachers, visiting scientists, Members of the Museum, and the public in general. The reading room and lighting equipment have recently been modernized to provide the greatest possible comfort and convenience.



BOOKPLATE
USED
BY THE
MUSEUM
LIBRARY

Reminiscences

By
HENRY F. DITZEL
Registrar

The Early Days When Marshall Field, the Founder, Was a Frequent Visitor

On the memorable day of the opening of Field Museum to the public—June 2, 1894—the late Dr. Frederick J. V. Skiff, first Director, delivered an inaugural address to a large assembly of citizens on the front steps. Many members of the audience had earnestly and tirelessly worked for years to make the establishment of this civic institution possible.



Henry F. Ditzel

Before this assembly, gathered at the portals of the Museum's first home, the former Palace of Fine Arts in Jackson Park, Director Skiff said:

"There has been gathering head in this western land of ours during the more recent period of its history a mighty power of civilization. Neither ancient, mediaeval nor modern times present a wider intellectual horizon, a period so alive to the demands of progressive humanity. The annals of centuries do not

contain such evidence of a quickened higher culture and uplifting of educational forces as has been evoked within the past few years on the shores of the lake."

Dr. Skiff credited the World's Columbian Exposition of 1893 with leaving an ineffaceable impress on the social, moral, and intellectual development of the world, and declared that the establishment of the Museum marked another effort to meet the growing needs of a highly developed people, and to gather up the truths of the sciences and preserve them as a perpetual benefit to mankind.

The idea of a natural history museum in Chicago had been seriously considered as far back as 1890. The museum was proposed under many names, such as the Museum of Antiquities, Columbus Memorial Museum, World's Exposition Memorial Museum, and Columbus Museum of America. On August 31, 1893, the citizens' committee appointed to incorporate a museum adopted as a name "The Columbian Museum of Chicago," and application for the charter was forwarded to Spring-

JUNE 2, 1894—GREAT CROWDS ASSEMBLED FOR THE MUSEUM'S OPENING CEREMONY



field on September 16. However, these plans and arrangements were all made without any tangible prospects of endowment. At first, the raising of funds proved difficult, and the sums received were inadequate. Nothing but the faith, devotion, and courage of a few men prevented the disintegration of the preliminary organization and the practical abandonment of the enterprise. Then, the attention of the late Marshall Field was directed to the difficulties confronting the Museum project, and he made his first contribution of \$1,000,000, which assured the prompt carrying out of the plans.

A friendly spirit among exhibitors at the exposition was at once aroused. Foreign and state commissions, and American corporations and individual exhibitors increased their contributions in proportion to the liberality of Mr. Field's gift. Many valuable collections, which had been in danger of dispersal, at once became the property of the Museum, and hundreds and hundreds of tons of material were transported to it. Then selection, alteration, arrangement, rearrangement, and elaboration began. Gradually hall by hall of the building was emptied of exposition displays, and museum exhibits were arranged in their places.

MUSEUM IN PACKING CASES

The former Museum building contained four great courts with a rotunda in the center. From these, numerous halls could be entered. The main large courts were somewhat similar in height and width to the present Stanley Field Hall. In this vast space and into the adjacent halls, packed in boxes, bundles and otherwise, the accumulation of material was first piled. While Director Skiff was regarding this conglomeration one day, Mr. Marshall Field entered the building. Walking up to Director Skiff, he said: "There, Mr. Skiff, is your museum—you can now start your work." This was the beginning of the beautifully installed and orderly Field Museum of today. When it is recalled that the Museum was then practically unorganized as to its staff and its systems of installation, labeling, and recording, one can realize what an arduous task confronted the first Director.

Subsequent to its opening, Mr. Field frequently visited the Museum, especially on Sunday afternoons. He would walk (for the most part unrecognized by other visitors) through its halls, studying the exhibits and

noting with special interest the remarks made by the people. Late in the afternoon he invariably wandered into the Director's office (Dr. Skiff was habitually present on Sundays). Mr. Field would rest in a large wicker arm chair beside an office window that overlooked an adjacent lagoon. Here he and the Director discussed future plans, and possibilities for expansion and development. Mr. Field enjoyed the scene outside the office window, and often watched the children at play on the park lawn and the boats on the lagoon.

There is no record of exactly what Mr. Field and Dr. Skiff discussed, but its import may be surmised from Mr. Field's subsequent bequest of \$8,000,000 to the Museum.

PLANS FOR CENTURIES

Although the first half century of the Museum's activities was marked by tremendous strides and the establishment of a firm foundation for future development, Messrs. Field and Skiff looked far beyond this half century horizon. They felt that the work of the Museum must never cease, and planned a building to house it for many centuries.

The birth of Field Museum was on grounds sanctified by the gathering in friendship and understanding of representatives of all the principal nations of the earth. On this fiftieth anniversary let us recall the words of Edward G. Mason in his opening day address:

"The stately halls of the Museum which but the other day contained simply the products of the chisel, the brush, and the pencil, are now filled with the long array of ordered series which tell the story of the great globe itself. . . . By its collections even the most careless observer must profit to some degree. Infinitely more is its meaning to those who read its object lessons aright. These bring to light the processes which have formed the world in which we dwell, the materials of which it is composed, the treasures of the rocks, the ancient and the modern life of earth and air and sea. These disclose the beginning of our race in that antiquity too remote to conceive of, and its incredibly slow and toilsome movement through savage aeons to the dawn of a better day. And thence onward they unfold to us the highest meaning of this Museum, which is the development of the mind of Man. . . . Here men will come to learn what man has accomplished, and to prepare to take the next step beyond."

Chicago Family Attends 250 Raymond Foundation Programs

Presented at the Museum During the Last Eleven Years

How often, in casual conversation, have you heard people say—perhaps you have often said it yourself—“Field Museum is a wonderful place, but Chicago people seldom go there. Most of the visitors are from out of town. Chicago people visit museums in New York, Washington, or other places. At home they just think about going—but never do.”

We at the Museum know that this, like all generalities, is not even approximately true. Chicago people do appreciate Field Museum and great throngs make good use of it, especially on Saturdays and Sundays. While the Museum's reputation is a magnet for visitors from outside of the city, and they probably constitute a large percentage of the attendance, it is nevertheless true that probably the larger number of visitors are Chicagoans.

For true enthusiasm on the part of local residents, there has recently come under the observation of Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, the case of a Chicago family—father, mother, and three sons—who have been coming regularly to all the Raymond Foundation programs in the James Simpson Theatre each spring, summer, and autumn for eleven years. During all that time several members of this family—in most cases the whole family—have been present at every one of these programs. The average number of such programs has been about 23 annually during the eleven-year period, or a total in the neighborhood of probably more than 250 programs. This family still comes, although lately the oldest of the three sons no longer accompanies them because he is now enlisted in the United States Coast Guard.

Mr. and Mrs. Carl Knoll are the parents of this extremely Museum-conscious family. They reside at 901 Newport Avenue. Both were born in Europe, and arrived in this country in 1921 (the year the present Museum building was opened). As far back as that they began making frequent visits to the Museum, and then finally developed their visits to the frequency noted for the last eleven years.

Mr. Knoll is a waiter, formerly employed in a downtown hotel until it was taken over

for Army use. Since then he has been engaged in a large restaurant. His principal interests, besides natural history, are literature, sociology, and political economy. Mrs. Knoll's principal interest is her family's welfare. She does not strive to lead or direct their interests too pointedly. The Museum interest has grown as a result of the boys' own initiative—they have led the family in this direction. Paul, the oldest boy, now in the Coast Guard, became so interested in the Museum that he sought, and obtained, a position as an usher in the Museum Theatre on Saturdays before he became engaged in full-time work. Karl, the second boy, is a high school student with a special aptitude for mechanics. George, the youngest lad, is studying music, especially the violin.

Probably there are many Chicago families who are equally enthusiastic about Field Museum and others of this city's cultural institutions, although it is doubtful whether many, if any, could point to quite such a faithful attendance record.

COLONEL GREGG MAY BE PRESENT FOR FIFTIETH ANNIVERSARY

Unless his duties with the United States Army at Camp Hood, Texas, prevent him from coming, Colonel Clifford C. Gregg, Director of the Museum on leave for the duration of the war, is expected to be present at the ceremonies on September 15 in celebration of Field Museum's Fiftieth Anniversary. All who know Colonel Gregg's devoted attachment to the Museum, and his interest in the institution's every



Col. C. C. Gregg

branch of activity, are confident that he will attend if arrangements for a short absence from his post can possibly be made. If so, he will be among the speakers on the Museum program. Colonel Gregg has been on active duty with the Army since 1940, and, as at present, with the Tank Destroyer Center for more than a year.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN

JOHN P. WILSON

OFFICERS

STANLEY FIELD	.....	President
ALBERT A. SPRAGUE	.....	First Vice-President
SILAS H. STRAWN	.....	Second Vice-President
ALBERT B. DICK, JR.	.....	Third Vice-President
*CLIFFORD C. GREGG	.....	Director and Secretary
ORR GOODSON	.....	Acting Director and Acting Secretary
SOLOMON A. SMITH	.....	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD.....Curator Emeritus, Zoology

CONTRIBUTING EDITORS

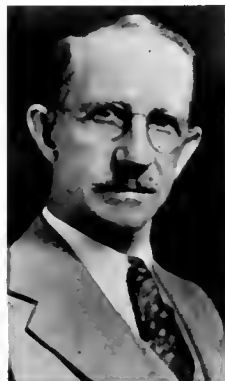
PAUL S. MARTIN.....Chief Curator of Anthropology
B. E. DAHLGREN.....Chief Curator of Botany
HENRY W. NICHOLS.....Chief Curator of Geology
KARL P. SCHMIDT.....Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE.....Public Relations Counsel

TIME AND OPPORTUNITY

Despite the well-worn aphorism, time is not necessarily the equivalent of money or of progress. Accretions of time alone may mean little, but time well spent in continuous acceptance of opportunity brings results scarcely measurable in terms of dollars and cents.



Wilfred H. Osgood

Today Field Museum is rendering an account of the stewardship of its time rather than its money. It has had fifty years of time and never more than a very modest amount of money. Its avowed purposes have been several. Broadly speaking, it has endeavored to provide wholesome entertainment and reliable information for its local community, and to contribute to the growth and spread of knowledge throughout the world. In pursuing these objects there has

been a cumulative gain of incalculable value which becomes more apparent as past years are reviewed on such an occasion as a fiftieth anniversary.

In its day-to-day activities a museum is dynamic and productive; in the long run, however, it is an instrument of conservation—conservation of knowledge, conservation of natural objects, conservation of human talents and efforts. After fifty years, it can be seen that opportunities accepted in the past will never recur, that objects acquired by momentary alertness cannot now be duplicated, and that no amount of money could today reproduce the accomplishments that are now safely ours from yesterday.

The very founding of Field Museum was timely. At the close of the nineteenth century the great changes of recent years were scarcely suspected. World travel was free and untrammelled. Many fields of exploration still lay open, and many opportunities were at hand to save for posterity the things of an era that was soon to pass. In its first decade the Museum acquired its North American Indian collections and its Egyptian collections, both now priceless and irreplaceable. Shortly after the Spanish War and American occupation of the Philippines, expeditions were sent into that field with results that no present day effort could equal. At an early date, by prompt action in a unique opportunity, an almost unparalleled collection of meteorites was obtained, and meteorites do not grow under every bush. Then came the great Chinese collections, and they too could not now be duplicated.

Meanwhile there was steady growth in all directions, and collections both for exhibition and for research reached proportions comparing favorably with those of many older institutions. Through its expeditions to all parts of the world the Museum participated in an era of discovery and exploration such as no future can repeat. Many wholly unknown animals and plants were discovered—hundreds of them—and their unique types are now preserved as standards for all time. Discoveries of this kind, it should be noted, are made but once.

While its collections were growing, the Museum was providing the conditions for men of power and talent to develop and spread their influence afar. These also cannot be duplicated for they and their times were interdependent. It is scarcely to be hoped that there will be

another genius like Carl Akeley, another artist like Charles Corwin, or another scholar like Berthold Laufer.

War, "the most wasteful of human activities," is accelerating the normal emergent or growth values of American institutions. It not only destroys many irreplaceable objects, but disrupts organizations for the promotion of knowledge and narrows the field of activity.

Many museum treasures have been effectively safeguarded in Europe and it is to be hoped that losses may be small, but undoubtedly there have been losses and there may be more. There is also destruction of sources of museum material, especially in the Pacific islands where military exigencies may lead to the extermination of animals and plants or the transformation of native tribes.

In any event it is well that America has not neglected its opportunities. In whatever world there is to come, therefore, it will be evident that our first fifty years have been well spent.

—WILFRED H. OSGOOD
Curator Emeritus, Zoology

THE EVOLUTION OF MUSEUMS

Early museums were only an expression of man's instinct for hoarding—mere curiosity shops—and their collections included not only such things as two-headed calves and four-legged chickens, but bones of the prophets or pieces of rope with which notorious criminals had been hanged. Later, they became storehouses of natural objects, used only by spectacled and bearded wiseacres, whom the average man regarded as cranks or freaks of nature, themselves scarcely less peculiar than the collections they pored over. The next period was when the public character of museums began to be recognized. They were then supported by governments and municipalities, and attempts were begun to make exhibits that would be attractive to the people. This was followed by the fourth stage when the museum actually reached out to the public in various lines of service, becoming a dynamic force in general education. The fifth stage, now developing, promises to find museums everywhere recognized as definite necessary parts of educational and research activities throughout the world. That this is so is evident from the tremendous increase in the number of museums in small towns and cities.

HOW OLD ARE MUSEUMS?

By WILFRID D. HAMBLY
CURATOR, AFRICAN ETHNOLOGY

In the year 1623 the well-known philosopher Tommaso Campanella wrote a long discourse under the Latin title *Civitas solis* (The City of the Sun). The story is a dialogue between the Grandmaster of the Knights Hospitallers and a Genoese sea captain.

The good captain describes a voyage in which he visited a large (mythical) city built upon a high hill, where he made the acquaintance of people who had evolved an ideal form of government in which peace and good will were prominent virtues.

The educational system was liberally developed under a supervisor of education named Wisdom, who was master of the liberal arts, of mechanics, and of all sciences. The teachers, acting under the direction of Wisdom, are said to have written with conciseness and marvelous fluency of expression. These scientific writings were then read to the people, and to assist the study a large building, which was surely a model museum, was provided.

One part of the building appears to have been an imaginary forecast of the modern planetarium, for there were pictures of stars in their different magnitudes and diagrams "of the powers and motions of each."

On the interior wall of the first room, mathematical figures were conspicuously painted, and explanations were given in neatly written verses. The mathematical section also contained murals showing various alphabets.

LABELS IN VERSE

A second room was devoted to paintings of all kinds of precious stones, minerals, and metals, and opposite each painting was a little piece of the metal itself which was described in a "small verse." We seem to have here a conception of the art of museum labeling, and we trust the labels were, as we strive to make our own, brief so as not to be tedious. Indeed, the narrative suggests that boredom of the public was avoided by using only "small verses" for each metal or stone.

The geographical and economic section of this imaginary museum contained maps and pictures of seas, rivers, lakes, and streams over all the face of the earth, and in bottles were "the wines and the oils, and the different

liquids, with the sources from which the last are extracted and their qualities and strengths. There are also vessels built into the walls above the arches, and these are full of liquids, from one to three hundred years old, which cure all diseases." We seem to have in this paragraph a hint of a medical collection. In the geographical section there were pictorial representations of hail, snow storms, and thunder, "and whatever takes place in the air."

The interests of the botanists were not neglected in this bold seventeenth century conception of what a museum ought to be. All the different families of trees and herbs were depicted, and there was a live specimen of each plant in an earthenware vessel. Once more the labeling seems to have been a pretty good job, for the sea captain says that with each specimen there were explanations as to where it was found and "its power and nature." Medicinal uses of the plants, especially, were described.

ZOOLOGY A MAJOR DEPARTMENT

Zoological interests were by no means neglected, and on one of the walls were "races of fish found in rivers, lakes, and seas and their habits and values, and ways of breeding, the purposes for which they exist in the world, and their uses to man." It seems that our modern labeling could not do much better than this forecast of three hundred years ago. The captain says, "I was astonished when I saw a fish which was like a star." He continues, "There are sea urchins to be seen and the purple shell-fish and mussels; and whatever the watery world possesses worthy of being known."

In the fourth interior—the captain seems to use the word interior for room—all the different kinds of birds are painted with their natural size, customs, colors, manner of living, etc. Elsewhere the visitor could see "the races of creeping animals; lizards, dragons, and worms; the insects, the flies, gnats, beetles in their different states, and a great deal more than you or I could ever think of."

In the fifth interior "they have all the larger animals of the earth, as many in number as would astonish you. We, indeed, know not the thousandth part of them, for on the wall a great many of immense size are portrayed. To be sure, of horses alone how great a number of breeds there is and how beautiful are the forms that are cleverly displayed." In speaking of portraying domestic animals in a museum

the worthy sea captain seems to have anticipated our own efforts by about 300 years.

The compiler of this narrative of an imaginary city and a model museum seems reluctant to limit his conception in any way, for in addition to a liberal representation of natural history he says that the museum contained "paintings of all the mechanical arts with the several instruments for each and their manner of use among the different nations." The mechanical section included a synopsis of the science of warfare.

With a truly bold conception, and regardless of expense, the sea captain then equipped his museum with a room of statuary representing Jesus Christ and the Twelve Apostles as well as sculptures of Caesar, Alexander, Hannibal, and "other very renowned heroes in peace and war."

The modern use of guide-lecturers seems to have been anticipated, for in this mythical museum of three centuries ago there were "magistrates who announce the meaning of the pictures, and boys are accustomed to learn all the sciences without toil and as if a pleasure."

During half a century Field Museum has made remarkable progress in many branches of technique, field work, and educational enterprise. But we still have to salute the old sea captain who packed into his one museum our own collections, as well as those of the Art Institute, the Planetarium, the Shedd Aquarium, and the Museum of Science and Industry.

QUARTZ—BY THE TON, AND BY THE CARAT

If ordinary eggs were selling at 45 cents a dozen, and "the best" at \$450,000—

If milk sold for 11 cents a quart, but "grade A" milk cost \$110,000—

—the spread in price between the different qualities would be no greater than that actually existing in certain minerals, it is pointed out by Mr. Henry W. Nichols, Chief Curator of Geology. In the case of quartz, for example, the spread is so great that the question "What is quartz worth?" is nearly as difficult to answer as "How long is a piece of string?" The quartz shown in Hall 36, in the form of building sand, may sell for less than 50 cents a ton, while clear quartz in the form of the choicer qualities of amethyst, as exhibited in H. N. Higinbotham Hall of Gems and Jewels may bring \$20 per *carat!*—more than 180 million times as much.

“Lenses on Nature”

THE MUSEUM'S FIRST INTERNATIONAL PHOTOGRAPHIC EXHIBIT

A Golden Anniversary Event

For the first time in its history, Field Museum this year is sponsoring an International Photographic Exhibit, to be presented under the title “*Lenses on Nature.*” This event will be a feature of the Semi-Centennial Celebration. Invitations to participate were sent to photographers, both amateur and professional, throughout the United States, Canada, Mexico, Central and South America, and elsewhere. The results may be viewed in Stanley Field Hall of the Museum during the period from September 15 to November 15 inclusive. It is hoped to hold further exhibits of this kind in future years.

This exhibit will differ considerably from most photographic “salons,” as it will be devoted exclusively to the specialized field of pictures pertaining to natural history and science. Contributors include, besides the usual “camera fans” and the photographers who make either a business or a hobby of picture taking, a great number of naturalists, geographers, anthropologists, and artists to whom photography is an avocation pursued because of its functions in their regular occupational activities.

Each contributor was limited to submission of four prints. Those to be placed on display have been selected by a jury composed of: Dr. Fay-Cooper Cole, Chairman of the Department of Anthropology, University of Chicago; Valentino Sarra, well-known Chicago and New York photographer; C. E. Brockhausen, Past President, Chicago Camera Club; J. P. Wahlman, President, Fort Dearborn Camera Club; Samuel Insull, Jr., Museum Trustee, and Dr. B. E. Dahlgren, Chief Curator of Botany. Ribbons have been awarded to a few pictures chosen as possessing superior merit. Anyone desiring to purchase copies of any of the photographs on display will, upon application, be put in touch with the exhibitors. Illustrated catalogues will be placed on sale at a nominal price when the exhibit opens.

The idea of holding an exhibit of this kind has been considered at various times for a number of years by the administration of the

Museum, and when plans for the Semi-Centennial were being made, Acting Director Orr Goodson decided that this would be the ideal time to initiate the project.

The pictures to be exhibited have been accepted on the basis of their pictorial or artistic merit, as well as for their natural history or scientific interest. All had to fall within the meaning of the term *Nature*, interpreted in a broad and general manner. For the purposes of this exhibit, nature photographs were defined to conform with the scope of the four scientific departments of the Museum—anthropology, botany, geology, and zoology.

Pictures on anthropological subjects were restricted to those of non-European peasant folk, and to aboriginal peoples. Particularly sought were a good selection of portraits of the men, women and children themselves, and photographs illustrating phases of their lives; also pictures of ancient ruins, villages, pueblos, cities, pyramids, and burials.

In botany there were sought good photographs of wild flowers, plants, trees, forests, and other plant formations. Most sought were photographs with an exotic or otherwise exceptional quality, such as striking pictures of tangled jungle vegetation, odd desert plants, and the flowers found at mountain timberlines adjacent to snow.

Pictures considered acceptable for geology included those which show clearly and distinctly some effects of the forces of Nature which have altered the appearance of the face of the earth.

For the zoology division, photographers were asked to submit portraits of living animals, either wild or captive in zoos, etc., but photographs of domestic animals (either work animals or pets) were excluded. A special desideratum was photographs illustrating animal phenomena such as natural flocks, swarms, or other aggregations, animals in motion, and photographs illustrating habits.

Press deadlines for this issue of FIELD MUSEUM NEWS make it necessary to report plans for this exhibit in advance of the time

all the photographs were received, and before the full success of the project can be weighed. However, enough evidence has come in to indicate that this type of activity engenders sufficient interest both among those who enjoy capturing nature's manifestations with the shutters of their cameras, and those who as spectators simply enjoy seeing pictures of the earth and its creatures, to justify a program for continuing such exhibitions as annual events.

MUSEUM SCIENCE AND GEOGRAPHY

By KARL P. SCHMIDT
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

To the non-scientific public "pure science" often appears to ramify into varied investigations of a most impractical nature. The scientific staffs of museums of natural history are for the most part engaged in researches of this type—studies on the distribution of a tiny mouse-like rodent in the Andes, an investigation of the relations of one type of extinct animal with another equally extinct, or the description of endless "new species" of plants and animals.

The urgency of the war effort to preserve a kind of civilization in which pure science may continue, and the necessity of turning every man to a useful niche in that effort, have combined to make museum workers conscious of the impractical nature of their ordinary researches. Many of us, as may be witnessed by our honor roll (which is like that of every other museum), have gone directly into the armed services, while others have gone into government service in some civilian field, leaving only a few of the older staff members to carry on "for the duration."

PRACTICAL KNOWLEDGE PROVIDED

It is gratifying to find that whether in the armed forces, in civilian government service, or in the Museum itself, the Museum staff member has a kind of knowledge to offer that is of vital importance. This is his knowledge of geography. In the course of a museum expedition to some far corner of the world, many of us have gained specific knowledge of areas of strategic importance in the daily headlines—Burma, the Solomon Islands, the Galapagos, or the coast of Peru. Even more important, we discover that we have been thinking geographi-

cally for years, and that our knowledge of details is tied together in a comprehensive acquaintance with whole continents. Both specific and general knowledge have been drawn upon by the army and navy, and by special services, and such demands have reached even the stay-at-homes in every department. For example, one of Field Museum's anthropologists is a member of the National Research Council's Committee on Africa; the Department of Botany has been drawn upon for accounts of the poisonous and edible plants of the tropics; geologists offer a recent acquaintance with the Arctic; and zoologists have supplied expert knowledge of South America and Africa, and, after being consulted about snake-bite in tropics, have been asked to aid in preparing a service-man's "Baedeker" of the South Sea Islands. Staff members are now in special service directly related to their museum experience in Venezuela, in Ecuador and Peru. The Army Medical Service draws upon our entomologists for their knowledge of insect-borne disease. Others in combat service have distinguished themselves in ways attributable to their training on museum expeditions.

The geographic principle that the distribution of rocks and mountain chains and of plants and animals and even of men and their civilizations follows intelligible patterns in our world, lies at the foundation of museum efforts in both exhibition and research. The museum man's training, by study of the known distributions of his material at home and by enlargement of his knowledge of foreign exploration, has inevitably made him a geographer. The Museum Library is rich in books of travel and geographic literature and the Museum's own publications and the photograph albums from its foreign expeditions are mines of original information on geographic questions.

Our lack, as a nation, of geographic understanding has often been conspicuous; we have inevitably been provincial during our national growth. As the mental horizons of our citizens, from the most obscure private (and his mother with his foreign postmarked letters) to the leaders of the nation, expand with our worldwide interests in the war, and with such a diffusion of "real" geographic education on which to build, museums may look forward to a more intelligent interest on the part of the public and a greater challenge to their functions in both exhibition and interpretation.

Research and Education

An establishment for the increase and diffusion of knowledge among men is a noble phrase from the bequest that founded the Smithsonian Institution, expressing the dual interest of scientific museums in research and in education.

RESEARCH

It is the special province of museums to accumulate and preserve material both for exhibition to the general public and for technical study and report. Such accumulation preserves knowledge; but a critical survey shows that our knowledge of the mineral, vegetable, and animal kingdoms has made no more than a beginning—that vast opportunities lie before us to *increase* knowledge—and that the intelligent diffusion of knowledge requires the humble feeling that we are at the beginning, and not at the end, of science.

Museums and universities have much the same fundamental aims. The teaching function of both is likely to fail or to be limited unless it has a background of research. In former years, when the fields were smaller, universities were able to cover the physical and biological sciences both in teaching and in research. The tremendous growth of knowledge, however, has made some division necessary. In recent decades the emphasis in university research has been mainly on the synthetic or explanatory and the theoretical and experimental aspects of the sciences, leaving the descriptive and objective fields more and more to the museums. At present, therefore, certain kinds of research are best done in the universities and other kinds can only be done in the museums. Since the universities are more numerous and their personnel much larger, experiment and speculation tend to outrun their factual foundations. This makes it the more important for museum research to be pursued vigorously wherever possible.

The departments of descriptive natural science that find their natural home in museums are essential in the long run to the sound development of the synthetic branches—comparative anatomy, physiology, ecology, genet-

ics, evolutionary studies, geological theory, and the social applications of anthropology—which are helpless or exposed to speculative aberrations without the orderly and permanent classifications of the plants and animals, rocks and fossils, and of the product of human material cultures. These rest on the accumulation, preservation, and recording of specimens.

The interests of the experimentalist need to be extended to other animals than the fruit fly and the white rat, and his eyes to be lifted beyond the range of his laboratory cages to the fields and forests or streams and seas in which animals in nature have their being. The experimental sciences, when drawn upon as tools and for suggestion for renewed attack on the problems of descriptive science, in their turn infuse new life into the museum fields of interest. Co-operation between museum and university scientists is important, but we must not lose sight of those special functions of museums which are *not* supported by universities. Museum research should be aware of the related scientific fields pursued in the experimental laboratories, but should not in general engage in them. It is a practical matter rather than one of the relative importance of subjects, both of which are essential to the progress of knowledge.

Research in natural history involves the study of natural experiments that have been going on in the world for eons, while the laboratory guinea pig has a history of a few years at most. The two types of research are inter-related and should be kept abreast of each other for the solution of fundamental problems affecting them mutually.

EDUCATION

Aside from the provision of enjoyment of nature to the public implied in the root of the word "museum," the most obvious function of a museum is education. As an educational institution, the museum compares with a library rather than a school of any kind. Like a library, it reaches every age level and cuts across all divisions of society. Even the distinction of the open shelves and the reference stacks in a great library is matched by the

museum's open exhibition halls and its equivalent of a "stack permit" to bring the interested visitor to the reference collections.

For the development of their exhibition halls, museums require the services of a corps of artist-technicians under the direction of the scientific staff. The emphasis of museum exhibition in the past has been largely on the obvious—the representation of the animal, plant and mineral kingdoms and of the fourth kingdom of man's material culture, in which there is an insensible transition to the field of the art museum. Such representation, when done with artistic insight, has great and fundamental educational value. Field Museum's halls are now filled with specimens, models, and

habitat groups. These exhibits now require *explanation*, which is of even greater importance to the educational program.

Models of the machinery of the animal body—of the processes of development and birth, for example—enlarged models of the microscopic world, and synthesizing exhibits to show relations and sequences in the works of primitive man, present a field of activity that will absorb museum energies during the fifty years to come. Beginnings have been made in these directions in the several departments of Field Museum; they do not discount past efforts, but they do and should build upon them. To so build will require the application of every resource of intelligence and skill.

Special Exhibits Placed on Display for Fiftieth Anniversary

The revival of scientific investigation in the sixteenth century was stimulated by the invention of printing. The works of early writers, existing only in hand-lettered books, were republished and made widely available, thereby serving to give direction to further observation and experiment. "Natural history," out of which modern biology grew, flourished notably with this stimulus.

The effect of published scientific records and reports is no less important today. Field Museum has to date 566 scientific publications to its credit, plus numerous handbooks, guides, and popular leaflets. These publications are records of exploration and research, contributing to the sum of human knowledge, and serving to guide and aid the continuing investigation of our world.

In the celebration of the fiftieth anniversary of the founding of Field Museum, this often-

overlooked aspect of the institution's activity and growth is symbolized in a special exhibit to be displayed in Stanley Field Hall. Large-scale maps of the world upon which are indicated the sites visited by the many expeditions sponsored by Field Museum, surmount a display of photo-murals of expeditionary work and a complete file of the various scientific reports based on materials collected or supplemented by the expeditionary work. For other products of these expeditions, one is invited to consider the contents of the Museum exhibition halls and the literally millions of specimens in reference collections.

Fiftieth anniversaries naturally invite backward glances. Another feature of Field Museum's special exhibit will consist of photographs comparing the old with the new in exhibition methods. There will also be statistical charts and other pertinent items.



MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Annual Members contribute \$10 annually. Associate Members pay \$100 and are exempt from dues. Sustaining Members contribute \$25 annually for six consecutive years, after which they become Associate Members and are exempt from all further dues. Life Members give \$500 and are exempt from dues. Non-Resident Life Members pay \$100, and Non-Resident Associate Members \$50; both of these classes are also exempt from dues. The Non-Resident memberships are available only to persons residing fifty miles or more from Chicago. Those who give or devise to the Museum \$1,000 to \$100,000 are designated as Contributors, and those who give or devise \$100,000 or more become Benefactors. Other memberships are Honorary, Patron, Corresponding, and Corporate, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures. Subscription to *Field Museum News*, a monthly bulletin, is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

CONTRIBUTIONS AND BEQUESTS

Contributions and bequests to Field Museum of Natural History may be made in securities, money, books, or collections. They may, if desired, take the form of a memorial to a person or cause, to be named by the giver.

Contributions made to the Museum are allowable as deductions in computing net income for federal income tax purposes, subject only to the limitation that the total deduction for charitable gifts may not exceed in any year 15 per cent of the contributor's net income.

Contributions and bequests in any amount to Field Museum of Natural History are exempt from federal gift and estate taxes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron during his or her lifetime.

THE BOOK SHOP

To provide a reliable source of supply for authoritative books in the many fields of science within the scope of Field Museum, a Book Shop is maintained at the east side of the north entrance to Stanley Field Hall. Through the Book Shop there are available, at one location, books by reputable authors on anthropological, botanical, geological, and zoological subjects, as well as on explorations and other activities related to the work of the Museum. Included are the products both of Field Museum Press and of other publishers. All of the books kept regularly in stock have been passed upon by qualified members of the Museum's scientific staff. There is a large selection of books for children, as well as for adults. These include books which are amusing as well as educational—books for reading *to* the youngest children, books for reading *by* children of various ages, picture books, books of drawings to be colored, attractively prepared atlases, etc. On special orders the Museum Book Shop will obtain for purchasers practically any book available from any publisher or dealer in the world. Books may be purchased by mail order, but it is necessary to require payment in advance, as the Museum does not carry accounts. In addition to books, there are on sale miniature representations of various animals in bronze and other materials, for use as souvenirs, library decorations, and toys. Some of the larger figures are designed to serve as book ends. There are also on sale illuminated globes bearing maps of the world.



Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

NOVEMBER, 1943

No. 11

NEW HABITAT GROUP OF GIBBONS INSTALLED IN HALL OF ASIATIC MAMMALS

BY WILFRED H. OSGOOD
CURATOR EMERITUS, DEPARTMENT OF ZOOLOGY

The most recent addition to the Asiatic Hall (Hall 17) is a group of gibbons from Indo-China. The subject was chosen to improve the balance of the hall which heretofore has been devoted mainly to large hoofed mammals and carnivores. The primates were previously represented only by a group of orangs prepared by Carl Akeley in the Museum's first decade and later remodeled by Staff Taxidermist Leon L. Pray to suit the conditions in the present hall. The gibbons now take a place opposite the orangs, and one finds it difficult to decide which of the two groups is the more interesting. Because of its large size and more frequent appearance in captivity, the orang is better known to the general public, but the gibbon is also one of the anthropoids or manlike apes and among the most interesting of living mammals.

The great apes or anthropoids, first so called by Thomas Huxley, include only four types, the gorilla and chimpanzee of Africa, the orang of Borneo and Sumatra, and the gibbons of which there are several well-marked species inhabiting southeastern Asia and the East Indies. In all the monkey tribe these are nearest to man in physical structure and there can be little doubt that man and these apes had a common ancestor. No one seriously believes that man descended from present day gibbons or gorillas, but if they are not his great grandparents they are most certainly his remote cousins.

The gibbons show more physical differences from the other anthropoids than these do from each other, and it is not unlikely that their ancestry goes back to a time when

the common line diverged in three directions, one leading to the larger anthropoids, one to the gibbons, and the third to man. However this may be, the gibbons, in spite of their smaller size and highly arboreal habits, must be classified with the great apes and

assume uprightness with great frequency, and it has been estimated that in the wilds, even when in trees, nearly one-tenth of their walking is on two legs instead of four.

Most of the time, however, gibbons neither walk nor run, but leap and swing through the tree tops with a speed and agility scarcely equalled by any other primate. As brachiators (arm locomotors) they are pre-eminent. The American spider monkeys, whose long tails are provided with a grasping or prehensile tip, are highly adapted for tree life, but if a race could be arranged between them and the tailless gibbons the chances are that the gibbons would win with ease.

Gibbons are nervous, quick moving, and highly emotional. Their facial expression often seems reflective, at times, even sad and mournful. A slightly wounded one, which I once kept in camp for several days, constantly looked at me with its large liquid eyes appearing more reproachful than antagonistic.

All gibbons have powerful and remarkable voices which they exercise daily, especially in the early morning hours. Their calls vary among the different species, but all are loud and clear, some of them having a very human quality. They can be heard for several miles and one in their vicinity is never in doubt as to the presence of gibbons.

The Museum's group was obtained in the province of Annam, Indo-China, during a semi-pleasure trip which I made in 1936-37, part of the time in company with the Asiatic Primate Expedition and its representatives of Harvard, Columbia, and Johns Hopkins universities. The species shown is one of the rarer gibbons, a variety (*gabriellae*) of the white-cheeked gibbon which is confined to



GIBBONS—SMALLEST OF THE MANLIKE APES

New habitat group installed in William V. Kelley Hall (Mammals of Asia, Hall 17)

man rather than with any of the varied assortment of monkeys, mostly smaller, which are now living.

Some half dozen distinguishable species and several varieties of gibbons are known, the most common being the white-handed or lar gibbon of Malaysia and the hoolock of eastern India. Specific differences among them are mainly those of color and markings. All are characterized by exceedingly long arms, so long that when the animal walks erect they touch the ground. They are the only apes that habitually walk upright or nearly upright, although they do not have the structural adaptation of the spinal column known as the sigmoid flexure which is associated with the upright posture in man. In captivity, where kept on the ground, they

the forests of eastern Indo-China. It is one of those in which there is pronounced sexual difference in color, males being black with white or buffy cheeks, and females a beautiful tawny buff with only the top of the head black. In the deep forests near Banmethuot, Annam, it was found to be quite common. Two weeks spent in a camp pitched in a favorable locality in the heart of the jungle yielded a varied collection of mammals and a most interesting experience. During this time no less than five species of monkeys and apes were seen from time to time in the trees within view of the camp itself, and every excursion to any distance invariably met with some of them. A series of fifteen gibbons was collected with the help of native hunters. The task of preserving the skins and skeletons of these, in spite of considerable assistance from a native "boy," required so much time that my own opportunity for hunting and observation was severely limited, but nevertheless I was able to get out occasionally.

Every morning at sunrise I lay under my mosquito net and listened to a chorus of gibbon calls. These were quite musical and unlike the calls of other species. There was none of *whup, whup*, and *wahoo* usually heard from the commoner species in zoos, but a series of long clear whistles ending with a repeated slurring, *whééoo, whééoo* that reminded of nothing so much as the final cadences in the song of our American cardinal bird. At close quarters this comparison would perhaps not apply, but from a considerable distance it was striking.

In making the group, very valuable advice was obtained from Dr. C. R. Carpenter whose extended studies of the natural behavior of wild gibbons make him an acknowledged authority. As finally completed, the group presents the usual association of adult and young animals, what Dr. Carpenter calls a modal group—two adults, two younger animals of the same parentage, and a babe in arms. The great majority of gibbons are found in such groups. In this case they are shown on the move leisurely passing through high hanging vines and tree tops.

The animals were mounted by Staff Taxidermist W. E. Eigsti, the background was painted by Staff Artist Arthur G. Rueckert, and the rather elaborate accessories were produced by Preparator Frank H. Letl.

Unique African Shield

In Hall D, Case 1, is shown a large shield of very light texture, made from ambatch wood. This form, which is used by the Buduma tribe of the Lake Chad region, is unique among African shields. Warriors crouching low are completely protected, and so covered they can peek out quickly and jab at one another with their long spears.

CONSERVATION BRIEFS

V. Reptiles

(End of series)

BY KARL P. SCHMIDT
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

Snakes receive little sympathy from many people who have been "conditioned" to regard all of them, poisonous and non-poisonous alike, with horror. Nevertheless, they deserve consideration in any well-rounded conservation program. So do their fellow reptiles comprising the turtles and lizards. Also of interest to the nature lover and the zoologist, and worthy of protection, are the amphibians, which include frogs, toads, and salamanders.

The principal requirements for the conservation of these creatures are two: first, the diffusion of knowledge about them to counteract the prevalent but baseless aversion which so many persons feel toward them, due to psychological quirks; and second, the preservation of typical woodlands, prairies, sand dune areas, marshes, lakes, and rivers in their original condition, thus providing environments vital to any hope for the persistence of the smaller animals. Neither of these needs is easily met—the second is desirable not only for this purpose, but as a need of human beings themselves.

HATRED OF SNAKES DYING OUT

Snakes have been, and still are, the victims of persecution, but fortunately a tendency toward change in the public attitude toward them has been discernible within the present generation. Never before were there so many persons, adults and children, interested in amphibians, or so many contributing actively to the knowledge about them. In recent years this has been recognized generally by the press, and the editorial taboo against even mentioning snakes which once existed in the offices of many newspapers and magazines has now practically disappeared. Small turtles have become favorite household pets for children, and altogether the outlook for improvement in the public attitude toward all these creatures is now quite hopeful.

However, we still face great difficulties for the preservation of amphibians and reptiles in wild-life refuges. In thickly inhabited regions few natural areas still possess anything like their original quota of reptilian life. In the Chicago area, forest preserves are either of second growth or they have been "cleaned up"—that is, there have been removed the rotten logs and stumps which are essential to the maintenance of a normal population of such smaller creatures as shrews and wild mice no less than the snakes and salamanders which hide away in them.

Lamentable to botanists and ecologists, as well as to students of reptiles, is the fact

that there is no considerable area of original prairie sod left in the Chicago region. The best of our woodland area in the Indiana Dunes and in the north shore ravines is in private hands, sometimes fortunately for conservation interests, but usually to the detriment of permanent protection of wild conditions. Our streams tend to be polluted, our marshes to be drained, and our lakes to be overfished.

FIFTY YEARS OF PROGRESS DEPICTED IN MONOLITH

Erected for the Fiftieth Anniversary celebration on September 15, and continuing on exhibition until November 15, is a "monolith," 28 feet wide and 22 feet high, containing special exhibits pertaining to the Museum's history during its first half century. The exhibit occupies the center of Stanley Field Hall. It graphically portrays some of the principal events in the progress of the Museum since its founding in 1893. A feature is a map of the world in two large hemispheres, showing the territory covered by each of the institution's 440 expeditions to every clime. The research resulting from these expeditions and other activities is represented by hundreds of volumes of scientific publications issued by the Museum and displayed at the base of the monolith. Also included are many mural size photographs contrasting the exhibits of the Museum's early days with those of the present, and various charts of statistics.

PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN NOVEMBER

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock except Sundays, and certain holidays. There will be no tour on Thanksgiving, November 25.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering outstanding features of all four departments—Anthropology, Botany, Geology, and Zoology. Special subjects are offered on Wednesdays and Fridays; the schedule of these follows:

Wednesday, November 3—Ranks in the Army of Animals (Miss Loraine Lloyd).

Friday, November 5—Minerals Through the Ages (Bert Grove).

Wednesday, November 10—Cloth from Trees (Mrs. Roberta Cramer).

Friday, November 12—Ancient Spice Tales (Miss Miriam Wood).

Wednesday, November 17—Wisdom of the Wild (Miss Loraine Lloyd).

Friday, November 19—Tomorrow in Manila (Mrs. Roberta Cramer).

Wednesday, November 24—Thanksgiving in America (Miss Miriam Wood).

Friday, November 26—The Chicago Region's Ancient Past (Bert Grove).

Persons wishing to participate should apply at North Entrance. Tours are free.

MUSEUM CHANGES NAME, RECEIVES GIFT FROM MARSHALL FIELD, ON 50TH ANNIVERSARY

Following publication of the recent special number of FIELD MUSEUM NEWS devoted to the fiftieth anniversary of the Museum, a large meeting was held on the evening of September 15 in further commemoration. Invitations had been sent to the Museum's entire membership of more than 4,300 Chicagoans and to other leaders of the city, as well as to officials of other museums in

intention to give the Museum "certain pieces of property that should produce an income at least equivalent to what his annual contributions have been in recent years"; and (2), that, in accordance with recommendations made by both President Field himself and Mr. Marshall Field, the Board of Trustees had decided to change the name of the institution to Chicago Natural

History Museum. He has felt that since the Museum was created and maintained for the public and has become identified in the minds of the public as a Chicago institution, and since it is now playing a growing and important part in the educational activities of the city—it would be appropriate, and also in the best interests of the Museum, if the name were changed to: Chicago Natural History Museum, thereby identifying its ownership more closely with the people of Chicago to whom, of course, it has always belonged.

"It seemed to both of us that the occasion of the 50th anniversary was the logical time to announce the change. Accordingly, the matter has been fully discussed with the Board of Trustees, has met with their unanimous approval, and they have authorized me to make this announcement to you.

"The change will become effective as soon as legally possible." (*Editor's note: It now appears that the change will be effected about December 1.*)

Dr. Parr's theme was that Chicago's museum was in a particularly fortunate position to meet the demands of the present period of transition through which all institutions of its kind are going—a period in which, he contended, there must be "a revaluation of the needs and a reorientation of the educational and scientific purposes of the natural sciences."

PARR DEFINES AIMS

"When museums began," said Director Parr, "the natural sciences were chiefly concerned with the task of completing our descriptive knowledge of the contents of the world. . . . It was the age of the great explorations, which revealed to European and American civilizations a

(Continued on page 7)



Photograph courtesy THE CHICAGO SUN

PART OF THE CROWD IN STANLEY FIELD HALL AT MUSEUM'S 50th ANNIVERSARY

all parts of the country. The response was very gratifying, with more than one thousand persons in attendance, almost filling the seating capacity of the James Simpson Theatre of the Museum.

The principal addresses made at this time were by Mr. Stanley Field, President of Field Museum; Mr. Albert Eide Parr, Director of the American Museum of Natural History, New York, and Mr. Robert Maynard Hutchins, President of the University of Chicago. Briefer and less formal remarks were made by Dr. Wilfred H. Osgood, Curator Emeritus of Zoology, who acted as chairman for the occasion; Dr. Franklyn Bliss Snyder, President of Northwestern University; Colonel Clifford C. Gregg, Director of Field Museum on leave from service with the Army; and Mr. Orr Goodson, Acting Director.

Following the meeting, the gathering passed to Stanley Field Hall where refreshments were served, music was heard, and special exhibits were displayed.

In concluding his address Mr. Stanley Field made two important announcements: (1) that Mr. Marshall Field, grandson of the Founder, and member of the Board of Trustees, had advised the Trustees of his

History Museum. On these subjects, Mr. Field said, in part,

"While the gift of Mr. (Marshall) Field is very substantial, it is only his part in providing for a future which we hope may be on a scale suited to the standing of the institution, and to the importance of the great public and territory which it serves. The Museum must therefore look to other public-spirited citizens in the future, as it has in the past, for contributions to its support and development.

". . . The Museum has had three names: Columbian Museum of Chicago—Field Columbian Museum—and Field Museum of Natural History. Mr. Marshall Field has discussed with me several times the matter of the



Photograph courtesy THE CHICAGO SUN

SPEAKERS AT 50th ANNIVERSARY CELEBRATION

Left to right: Albert Eide Parr, Director, American Museum of Natural History; Wilfred H. Osgood, Curator Emeritus, Zoology, Field Museum; Orr Goodson, Acting Director, Field Museum; Franklin Bliss Snyder, President, Northwestern University; Robert Maynard Hutchins, President, University of Chicago; Stanley Field, President, and Colonel Clifford C. Gregg, Director, Field Museum.

SELF-DEFENSE EQUIPMENT OF THE TORTOISE-ARMADILLOS

BY BRYAN PATTERSON
CURATOR OF PALEONTOLOGY

(Now serving in the U. S. Army)

The study of life, both existing and extinct, has revealed a number of fundamental principles that operate in nature. Among the most interesting of these is one known by the formidable name of adaptive

Patagonia to Texas. These small to medium-sized omnivorous animals possess shells composed of a large number of united bony plates, each of which is covered by a horny one. A variable number of movable bands of plates across the middle of the body permits a measure of flexibility, which is sufficiently great in one form (*Tolypeutes*) to

protecting the body. The tail was encased in over-lapping bony rings, composed of bony plates, which in many of the later forms terminated in a club-like tube. In some this club was studded with blunt spikes. As in armadillos, the bony plates were covered by horny ones. These, of course, are not preserved in the fossils, but their imprint on the bony plates may be seen in the patterns, often intricate and mosaic-like, which the latter display.

The glyptodonts were strictly vegetarian in diet. As a result, the skull and teeth were very different from those of the omnivorous armadillos. In the latter the teeth are, for the most part, simple and peg-like, and the skull rather long. Glyptodont teeth were exceedingly long-crowned complicated grinders suited for chewing harsh plant food, and the skull became progressively shorter and deeper to accommodate them.

The acquisition of great size and weight and of a solid shell led to interesting modifications of the internal skeleton. The leg bones were massively built. In correlation with the high arch of the shell and the low level at which the head was carried, the hind legs were much longer than the fore. Flexibility of the backbone was no longer valuable, and the trunk vertebrae united to form tubes. This brought a resemblance to conditions in turtles, but it is accompanied by a profound difference related to basic distinctions between the shells of the two groups. The shell in glyptodonts and armadillos developed entirely from small bones formed within the skin, whereas in turtles it arose from a combination of skin bones and elements of the internal skeleton. Consequently, in the latter the trunk vertebrae and ribs are incorporated into the shell, while in the glyptodonts they were free from it, the shell merely resting upon the posterior trunk vertebrae and the hips behind and upon muscles in front. The neck vertebrae were so constructed as to permit the head to be drawn down and back, thus closing the anterior opening of the shell with the casque.

A further contrast to turtles lies in the lack of an under shell. The soft under-belly of the glyptodonts was amply protected, however, at least in the later and larger forms, by the great weight of the animals, which must have made it almost impossible for their enemies to overturn them.

These animals were in effect walking citadels practically invulnerable to attack. At the approach of an enemy all they had to do was squat—bringing the edges of the shell to the ground—draw in their heads, so as to present only the casque to the front, and wait. The tail served as an effective defensive weapon. Swung from side to side, this formidable giant's club was capable of dealing a crushing blow to any attacker incautious enough to venture within reach of it. The glyptodont exhibits in Ernest R. Graham Hall (Hall 38) have recently been overhauled, and restoration paintings and



RESTORATION OF GLYPTODON

Artist John Conrad Hansen's conception, based on scientific data, of a typical representative of the later members of the group. The scene depicted is in the Tarija Valley of Bolivia; the time—mid-Pleistocene, about 500,000 years ago.

radiation. Simply, and perhaps a little loosely put, this means that all groups of living things tend to become adapted to as great a variety of habitats as circumstances and their structure will permit. This principle operates on both the grand and the small scale. The mammals, with their infinite variety of forms adapted to different ways of life, are an obvious example of the grand scale, while the different climatic, altitudinal or soil preferences exhibited by the species of a genus of plants illustrate a smaller radius.

It follows, as a natural corollary of the principle of adaptive radiation, that there can be no patents in nature. The characters evolved by members of one group may be independently evolved by members of another. This has been particularly true of the ultimate in passive defense—the development of a bony shell to protect the body. The most familiar examples of this effective adaptation are the turtles. Similar protective structures, however, have been evolved in other reptilian groups, notably in a family of herbivorous dinosaurs, among mammals, and even in the fishes.

The only living mammals thus armored are the familiar armadillos that range from

enable the animal to roll itself up into a ball. The top of the head is covered by a casque, and the tail, except in one form, by a sheath, both composed of bony plates. The whole is an effective device, but it is not absolutely protective—the plates are too thin for that. A small dog that attached itself to the recent Paleontological Expedition to Honduras was able, in the twinkling of an eye, to tear half the shell from the back of an armadillo so unwary as to be caught by it. It would seem that the armadillos owe their survival mostly to their ability to dig themselves out of sight in an astonishingly short space of time.

For the last word in mammalian self-defense we must turn to the giant extinct relatives of the armadillos, the glyptodonts or tortoise-armadillos, the latest and largest of which attained over-all lengths of more than ten feet. Like the armadillos, from early fossil members of which they descended, they were of South American origin. In the course of the evolution of these animals the various characteristics just enumerated were carried to an extreme. The bony plates increased in thickness, and the movable bands in the shell were eliminated. The end result was a solid shield of armor, more than an inch thick in places,

diagrams have been added to the cases. A series of these shows a Pliocene glyptodont, *Eleutherocercus*, disposing of the saber-tooth marsupial *Thylacosmilus*. The attacker seems in this instance to have been killed by a blow from the glyptodont's tail received full in the face. Any carnivore that survived so unpleasant an experience would be likely to give glyptodonts a wide berth in future.

It has been emphasized in several previous articles that South America was isolated from the rest of the world throughout the greater part of the Age of Mammals, a stretch of time lasting almost 60 million years. The mammals of that continent underwent an adaptive radiation that was uninfluenced by immigration; the result was a fauna totally unlike any that came into existence elsewhere. Many of these mammals evolved along lines that were broadly similar to those followed by unrelated groups in North America and the Old World—the natural corollary of adaptive radiation stressed at the beginning of this article. There were, for example, South American pseudo-horses, pseudo-camels, pseudo-dogs, and pseudo-sabertooth cats. Together with these "ersatz" forms were others that had evolved along lines distinctively their own. The glyptodonts and armadillos were in this category. Nothing like them existed in North America, and in consequence, when the two continents were again united by the elevation of the Isthmus of Panama, they encountered no competitors among the northern mammals. Their ersatz compatriots were unable to compete, even

on their home grounds, with the more perfectly adapted invaders, but the glyptodonts and armadillos were able to spread northward and to extend their range as far as the southern parts of the United States.

RAYMOND FOUNDATION OFFERS FREE MOVIES FOR CHILDREN

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, which began its annual autumn series of free motion pictures for children in October, will continue to present programs on Saturday mornings throughout November. Each program is given twice, at 10 A.M., and again at 11, in the James Simpson Theatre of the Museum. Children from all parts of Chicago and suburbs are invited and no tickets are needed. They may come alone, accompanied by adults, or in groups from schools and other centers. Many of the films to be shown are in colors, and all have sound tracks. Following is the schedule for November:

November 6—ISLES OF THE SOUTHERN SEAS (*New Guinea, Samoa, Fijis, New Zealand, and other Pacific islands.*)

November 13—NORTH OF THE BORDER—CANADA (*Color and black and white pictures of the country to our north.*)

November 20—PHILIPPINES—GARDEN ISLANDS OF THE CHINA SEA. (*The Philippines before the war.*)
Also a cartoon.

November 27—ALL-CARTOON PROGRAM.

PHOTO EXHIBIT CONTINUES; 14 WIN RIBBONS

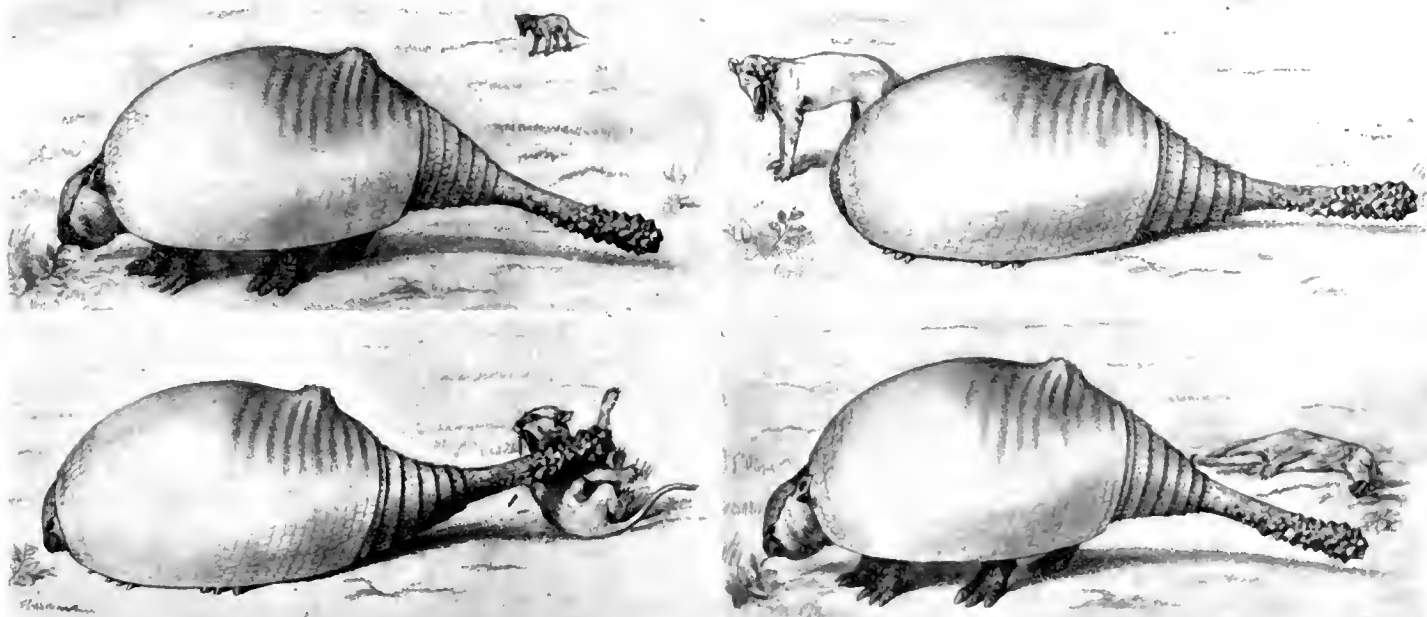
Blue ribbons for pictures of special merit were awarded to 14 entrants in the Museum's First International Photographic Exhibit, which opened September 15 and will continue on display until November 15, under the title "Lenses on Nature." Altogether, 152 photographs, out of nearly 400 submitted, all bearing on various phases of nature, are shown.

The blue ribbon winners are: Betty Henderson, F. L. Purrington, Chester W. Olson, Dr. Howard K. Gloyd, and Dr. Max Thorek, all of Chicago; and Dr. B. J. Ochsner, Durango, Colorado; William C. Horen, Winnetka, Illinois; Floyd B. Evans, Pasadena, California; Caryl R. Firth, Trappe, Maryland; John J. Harrack, Detroit; Dr. T. W. Kilmer, Hempstead, New York; Charles E. Mohr, Philadelphia; Henry D. Scott, Wheeling, West Virginia, and H. H. Sheldon, Boulder, Colorado.

All photographs, to be eligible, were restricted to subjects falling within the broad subject of nature, and include anthropological portraits, and photographs of plants, forests, birds, animals, geological formations, etc. The Museum has published an illustrated catalog giving the names of all photographers whose work is exhibited, and the titles of their entries (available at The Museum Book Shop, 10 cents). The exhibit was considered a notable success, and it is planned to continue this activity as an annual event at the Museum in the future.

PALEONTOLOGICAL "COMIC STRIP"

. . . Sabertooth Meets Old Spiketail . . . by HANSEN



Capable of active as well as passive defense, glyptodonts were animals to be left strictly alone by other creatures desiring to live in health and happiness. Those that failed to realize this often came to grief, and probably death, as depicted in this series of pictures showing how *Eleutherocercus*, a mid-Pliocene form of three million years ago, could and often did dispose of unwary predators. Here the intended surprise attack of a marsupial sabertooth, *Thylacosmilus*, was stopped with one mortal blow from the huge tortoise-armadillo's spiked and club-like tail. The curious "funnel" on this glyptodont's back is believed to have housed a large skin gland. These drawings are part of the Hall 38 exhibit.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

- | | |
|---------------------|----------------------|
| LESTER ARMOUR | STANLEY FIELD |
| SEWELL L. AVERY | SAMUEL INSULL, JR. |
| W. McCORMICK BLAIR | CHARLES A. McCULLOCH |
| LEOPOLD E. BLOCK | WILLIAM H. MITCHELL |
| BOARDMAN CONOVER | GEORGE A. RICHARDSON |
| WALTER J. CUMMINGS | THEODORE ROOSEVELT |
| ALBERT B. DICK, JR. | SOLOMON A. SMITH |
| HOWARD W. FENTON | ALBERT A. SPRAGUE |
| JOSEPH N. FIELD | SILAS H. STRAWN |
| MARSHALL FIELD | ALBERT H. WETTEN |
| | JOHN P. WILSON |

OFFICERS

- | | |
|---------------------|--------------------------------------|
| STANLEY FIELD | President |
| ALBERT A. SPRAGUE | First Vice-President |
| SILAS H. STRAWN | Second Vice-President |
| ALBERT B. DICK, JR. | Third Vice-President |
| *CLIFFORD C. GREGG | Director and Secretary |
| ORR GOODSON | Acting Director and Acting Secretary |
| SOLOMON A. SMITH | Treasurer and Assistant Secretary |

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD, Curator Emeritus, Zoology

CONTRIBUTING EDITORS

- | | |
|------------------|-------------------------------|
| PAUL S. MARTIN | Chief Curator of Anthropology |
| B. E. DAHLGREN | Chief Curator of Botany |
| HENRY W. NICHOLS | Chief Curator of Geology |
| KARL P. SCHMIDT | Chief Curator of Zoology |

MANAGING EDITOR

H. B. HARTE, Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

FIRST FIELD MUSEUM WOMAN TO WIN COMMISSION

Miss Elizabeth Best, now commissioned an Ensign in the WAVES, is the first woman member of Field Museum's staff to qualify as a "gold striper." She has been granted leave of absence from her position as a lecturer on the staff of the Raymond Foundation, and when last heard from had been assigned by the Navy to duties at a post in Seattle. Miss Best completed her Navy training at Northampton, Massachusetts. Her colleague on the Raymond staff, Miss Marie B. Pabst, has also joined the Women's Auxiliary of the Navy.



ELIZABETH BEST
ENSIGN, USNR.

FOUR MORE MUSEUM MEN IN MILITARY SERVICE

The Museum has lost its fifth Trustee, and three more members of its staff for the duration of the war. Trustee Samuel Insull, Jr., has been commissioned a lieutenant-commander in the U. S. Naval Reserve. Mr. Loren P. Woods, Assistant Curator of Fishes, was commissioned an ensign in the

Naval Reserve in September. Mr. Bryan Patterson, Curator of Paleontology, and Mr. Henry S. Dybas, Assistant in Entomology, were inducted into the Army in October. Trustee Lester Armour, Lieut. Cmdr., U. S. N. R., has been promoted to commander.

Mr. Bert E. Grove, Raymond Foundation guide-lecturer, who served in Africa as an ambulance driver with the American Field Service for a year, and was wounded in action, was inducted into the Army shortly after his return to the Museum last summer. He has since been given an honorable discharge for medical causes due to his previous African service, and has again joined the staff of the Raymond Foundation as a lecturer. He is also public relations representative of the American Field Service.

LT. MELVIN A. TRAYLOR WINS PROMOTION AND SILVER STAR

The U. S. Marine Corps has promoted Melvin A. Traylor, Jr., Associate in Ornithology on the staff of Field Museum, from Second to First Lieutenant (he originally entered the service as a private), and has awarded him the Silver Star for heroism.

The citation commended Lt. Traylor "for conspicuous gallantry and intrepidity in action while serving as an artillery forward observer attached to an infantry patrol on Guadalcanal on December 27, 1942. In order to reach a position from which he could better control artillery fire, he accompanied the patrol, at his own request, into dangerous territory in front of his own lines. The patrol was subjected to heavy enemy fire which resulted in the death of the only infantry officer present. Lt. Traylor assumed command and by his leadership and courage kept the patrol intact as a fighting unit."

In Memoriam

**MAJOR KERMIT ROOSEVELT
1889-1943**

News of the death of Major Kermit Roosevelt in Alaska recently was received at Field Museum with great regret. Major Roosevelt, and his brother, Brigadier-General Theodore Roosevelt (a Trustee of the Museum) were co-leaders of two of the Museum's most important expeditions—the James Simpson-Roosevelts Asiatic Expedition in 1925, and the William V. Kelley-Roosevelts Expedition to Eastern Asia in 1928. The zoological specimens they collected on these expeditions now form many exhibits in both the systematic series of mammals, and the habitat groups in Hall 17, including Marco Polo sheep, Asiatic ibex, and giant panda.

New Raymond Lecturer

Miss Emma Neve has been appointed a guide-lecturer on the staff of the James Nelson and Anna Louise Raymond Founda-

tion. Miss Neve, who graduated with an A. B. degree from Elmhurst College, and engaged in graduate work at the University of Illinois, has for the past three years been a teacher in the public schools of Elmhurst.

Technical Publications Issued

The following new technical publications have been issued by Field Museum Press:

- Zoological Series, Vol. 29, No. 1. *Malacological Notes—III*. By Fritz Haas. June 10, 1943. 24 pages, 8 text figures. \$0.30.
- Botanical Series, Vol. XIII, Part III, No. 1. *Flora of Peru*. By J. Francis Macbride. October 11, 1943. 508 pages.

FIELD MUSEUM HONOR ROLL

Now in the Nation's Service

Army

- THEODORE ROOSEVELT, Trustee—Brig. Gen.
- GEORGE A. RICHARDSON, Trustee—Lt. Col.
- CLIFFORD C. GREGG, Director—Colonel, G.S.C.
- DR. JOHN RINALDO, Associate, Southwestern Archaeol.—Staff Sgt.
- DR. SHARAT K. ROY, Curator, Geol.—Capt.
- D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Corp.
- BRYAN PATTERSON, Curator, Paleontology—Pvt.
- EMMET R. BLAKE, Asst. Curator, Birds—Corp.
- RUPERT L. WENZEL, Asst. Curator, Insects—Capt.
- HENRY S. DYBAS, Assistant, Insects—Pvt.
- WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.
- HENRY HORBACK, Asst., Geol.—Pvt.
- JAMES C. MCINTYRE, Guard—2nd Lt.
- RAYMOND J. CONNORS, Guard—Pvt.
- FRANK J. DUTKOVIC, Janitor—Pvt.



Navy

- LESTER ARMOUR, Trustee—Comdr.
- SAMUEL INSULL, JR., Trustee—Lieut. Comdr.
- JOSEPH NASH FIELD, Trustee—Lieut.
- COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut.
- DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol.—Lieut. (j.g.)
- LOREN P. WOODS, Asst. Curator, Fishes—Ensign
- JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics)
- PATRICK T. MCENERY, Guard—Master-at-Arms
- JOHN SYCKOWSKI, Guard—Ch. Commissary Stewd.
- GEORGE JAHRAND, Guard—Ch. Water Tender
- CLYDE JAMES NASH, Guard—Ch. Gunner's Mate
- NICHOLAS REPAR, Printer—Aviation Machinist's Mate 2C.
- MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C.
- HERRBERT NELSON, Painter—Painter 1C.
- ELIZABETH BEST, Guide-Lecturer—Ensign, WAVES
- MARIE B. PARST, Guide-Lecturer—WAVES

Marine Corps

MELVIN A. TRAYLOR, JR. Associate, Birds—1st Lt.

Coast Guard

- M. C. DARNALL, Jr., Guard—Ensign
- JOHN MCGINNIS, Guard—Ch. Boatswain's Mate

Other Services

- RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services
- BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army
- LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U.S. Government
- DR. JULIAN A. STEYERMARK, Asst. Curator, Herbarium—field work for Board of Economic Warfare
- DR. C. MARTIN WILBUR, Curator, Chinese Archaeol. and Ethnol.—Staff of Office of Strategic Services

MUSEUM'S 50TH ANNIVERSARY

(Continued from page 3)

diversity and abundance of natural phenomena undreamed of in the homelands. In the system of classification devised by Linneus, science had also for the first time in its history been offered a method by which it might actually be able to make a complete inventory of nature. . . .

"(But) the road along which the museums so brilliantly led the natural sciences in the last century has obviously become too narrow for their further advance. . . . We must attend to the application of our systematic knowledge of nature to the branches of research which depend for their results on the rigid use of such knowledge. . . . To define this broadened field by a single composite term you might call it the subject of dynamic natural geography, in which our principal aim must be to acquire an understanding of nature as we find it, and how it functions as it does under the various circumstances and in the different parts of the world. . . .

"The most immediate and most important present and future duty of the natural history museums is therefore the task of interpreting to the nation the natural conditions under which the nation lives and struggles for its livelihood, so that it can be better guided in its future dealings with nature and its products than it has been in the past. . . ."

"EDUCATE FOR LIFE," SAYS HUTCHINS

President Hutchins said, in part:

"An educational institution, Field Museum possesses certain special advantages. It has no football team. It gives no course credits or course examinations and awards no degrees. Its labors are not encumbered by the elaborate apparatus of academic bookkeeping which has resulted in education by the adding machine. The students of the Museum come here to learn. They do not ask it to help them make friends, get a better job, or give them a leg up the social ladder. . . .

". . . The maximum integration of the Museum with other educational institutions in the community is the first requisite of its increased educational usefulness. Although the Museum is so integrated with the public school system that no child can pass through the system without passing through the Museum, the same relations do not obtain between the universities of the area and the Museum, either in instruction or research. The reason is partly the inertia of the universities and partly the small size of the Museum staff. Highly valuable relationships do exist; but they are too few and too informal. . . .

". . . The education of adults is and must remain the peculiar obligation and opportunity of Field Museum. This is much more important than the task of providing innocent amusement for the citizen's idle

hours. The best index to the character of any civilization is the way in which those who have leisure use it. . . .

"In our own day, in our own country, the ideal of the Greeks has been attained. For slaves we have machines. The hours of labor have steadily fallen. The leisure which was the prerogative of the few is now the prerogative of all. This process will continue. . . .

"Machines can set men free. But freedom is not an end in itself. It is no good to you unless you know how to use it. . . . The transformation of the American conception of leisure, from time to waste, into time to learn, is one of the major responsibilities of museums.

"It is not education to make a living that we require, but education to make a life. . ."

The full text of the addresses by Messrs. Field, Parr, and Hutchins is to be published in a pamphlet, now in press, which will be distributed to all Members of the Museum.

WAR'S EFFECT ON PRIMITIVES TOLD IN SUNDAY LECTURES

"War Reveals Interesting Races in Strange Places" is the title of the "Layman Lecture" to be presented at Field Museum



Paul G. Dallwig

on Sunday afternoons during November by Paul G. Dallwig. This is the second of six topics to be discussed by Mr. Dallwig, who resumed his appearances at the Museum in October.

In the lecture to be given each Sunday during November (the 7th, 14th, 21st and 28th) Mr. Dallwig will attempt to make clear not only what constitutes "race," but will also explode the so-called "Aryan race" myth. His lecture, illustrated with the Races of Mankind sculptures by Malvina Hoffman, will cover the peoples of Africa, China, India, Japan, and the more important of the Pacific Islands now so frequently in the war news.

Mr. Dallwig will lecture on a different subject each month. In December his subject will be "Caveman Clubs his Way to Culture."

All of Mr. Dallwig's lectures begin promptly at 2 P.M. and end at 4:30. There is a half-hour intermission midway for smoking, refreshments, and relaxation. Mr. Dallwig's presentations this season will consist of one hour or more in the Museum Lecture Hall, and the balance of the time in the exhibition halls.

The size of Mr. Dallwig's audiences is necessarily limited to numbers practical for

passing in a group through the exhibition halls; for this reason it is necessary to make reservations in advance by mail or telephone (WABash 9410). The experience of past seasons is that long waiting lists are quickly formed for each title. There is no charge for the lectures or reservations, and admission to the Museum itself is free to everyone on Sundays.

FOUR MORE LECTURES FOR ADULTS IN SATURDAY COURSE

The autumn course of free illustrated lectures for adults will continue on Saturday afternoons throughout November in the James Simpson Theatre of the Museum. All will be illustrated with motion pictures, some in natural colors. The demand for seats makes it necessary to restrict admission to adults; for children, free motion picture programs are given in the Theatre on the mornings of the same Saturdays. The lectures for adults begin at 2:30 P.M.

Following are the dates, subjects and speakers:

November 6—BIG GAME HUNTING IN THE BACKYARD.

High adventure close to home.

Murl Deusing.

November 13—WILDLIFE IN ACTION.

Birds and animals caught unawares.

Olin Sewall Pettingill, Jr.

November 20—WHEELS OVER THE ANDES.

Sky driving across South America.

Robert Friers.

November 27—AMERICA MARCHES WITH AUSTRALIA.

Highlights of an island continent.

Greenwood Adams.

No tickets are necessary for admission to these lectures. A section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats upon presentation of membership ticket to the Theatre attendant before 2:30 o'clock on the day of the lecture, or by writing to the Museum (or telephoning WABash 9410) for reservation. Seats will be held in the Member's name until 2:30 o'clock. All reserved seats not claimed by 2:30 P.M. will be made available to the general public.

Wellcome Museum Survives Bombing

From the famous Wellcome Foundation in London comes the following note:

"Frequent inquiries are received about the two Wellcome Museums. They are, and will continue to be, housed in the Wellcome Research Institution, although the building suffered considerable damage by enemy action. Some objects in the Wellcome Historical Medical Museum were damaged. The Wellcome Museum of Medical Science remained comparatively intact."

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received since April 1, 1943:

Department of Anthropology:

From Donald Collier—200 sherds and 10 textile fragments, Peru; from Mrs. Retta Eckenrode—a banner stone; from Lowell Comee—ethnological material, Alaska and Northwest Coast; from Mrs. Malcolm S. Millard—a basket.

Department of Botany:

Herbarium specimens, both cryptogamic and phanerogamic, totaling 2,442, various localities in North and Central America, and Hawaii, from: C. W. Bazuin, H. K. Phinney, William A. Daily, Dr. George D. Fuller, Harold B. Louderback, James Zetek, Dr. Paul J. Philson, Dr. M. A. Brannon, Donald Richards, Prof. Maximino Martinez, Dr. Walter Kiener, Dr. Fred A. Barkley, Dr. Otto Degener, Lawrence J. King, Dr. Delzie Demaree, Miss Marjorie Thomason; and, from Dr. Earl E. Sherff—97 photographic negatives of plants.

Department of Geology:

From William F. Johnson—a fossil horse-shoe crab, Ill.; from William L. Corlew—a fossil minnow (*Cyprinidae*), Wyo.; from Miss Mary E. Davidson—an agate necklace; from R. Bensabot—a sardonyx ring; from S. A. Kurtz—5 calcite crystals, Ohio; from John W. Jennings—crinoidal limestone, Ark.; from Sam B. Ullman—differential erosion-Aplite dike in sandstone; from Capt. Sharat K. Roy—43 invertebrate fossils, N. D.; from John S. Albanese—igneous rock with garnet, Solomon Islands; from Dr. Frederick W. Bureky—4 mineral specimens, Ore., Calif., and Nev.; from Alfred A. Look—molar teeth of *Phenacodus*, Colo.; from Willett H. Cornwell—3 mineral specimens, N. C.; from A. S. Eekett—2 fossil corals, N. Y.; from Alfred S. McManus—ore specimens (4 iron, 3 gold), Canada; from Charles R. Short—3 specimens of diatomite, Fla.; from J. R. Holland—a fossil coral, Quebec.

Department of Zoology:

From Chicago Zoological Society—40 birds, a python, a boa, a snake from Honduras, a spiny-haired iguana, a reticulated giraffe, an African elephant, and 28 other mammals; from Dr. C. S. Smith—a pilot black snake, 4 millipedes and fragments, and a species of cavernicolous crustacean, Tex.; from D. Dwight Davis—5 lizards, Ark., and 35 phalangids, Ill., Colo., and Honduras; from J. E. Johnson—64 snakes, 17 lizards, a turtle, and 8 frogs, Tex.; from Josef N. Knoll—14 buprestid beetles representing 6 species, U. S.; from William J. Beecher—32 shells, 63 crustaceans, and 24 fishes; from R. C. Ellis—2 snakes and 2 lizards, Ark.; from Dr. Charles H. Seevers—253 insects and allies, U. S. and Mexico; from Ensign Merle A. Quait—5 frogs, a salamander, and 40 insects and allies, Ind., Ill.; from H. A. Freeman—2 butterflies, Tex.; from Dr. and Mrs. C. Goodnight—16 phalangids, Mexico; from Dr. J. C. Bequaert—4 wasps; from Robert A. Burton—a frog and 6 snakes, Iowa; from Robert R. Russo—47 beetles of 21 species, N. M.; from Dr. C. Clayton Hoff—27 slides of paratypes of ostracods; from Alex K. Wyatt—5 caddis-flies, Wis.; from Eugene Ray—a scorpion-fly, a neuropteran, a sawfly, and 3 bugs, Ill.; from Harry Hoogstraal—2 lizards, Ga., and 6 bats, Venezuela; from Dr. Wilfred H. Osgood—72 mammals, S. D.; from Arthur D. Hasler—6 species of fresh water shells, Wis.; from Pvt. Ernst B. Haas—77 land

shells, Tex.; from Harold C. Hanson—6 harvest mice, Wis.; from Col. Clifford C. Gregg—10 insects and allies, Tex.; from Mrs. Hermon D. Smith—10 snakes, Ontario; from Hon. R. M. Barnes—2 California condor eggs; from Pvt. Borys Malkin—45 scarab beetles, 5 book-lice, a pseudo scorpion, and 10 Zoraptera, Fla.

The Library:

Valuable books from: Col. Clifford C. Gregg, Dr. Wilfred H. Osgood, Dr. Henry Field, Dr. Adam of the Melbourne Museum, Boardman Conover, Henry W. Nichols, Paul C. Standley, Dr. Earl E. Sherff, L. W. Penick and Company, Dr. Robert T. Hatt, Walter F. Webb, Mengel Natural History Society of Reading, Pa., Manuel Liende Lazarto, Mrs. H. C. Tennent, Miss H. Elizabeth Story, Luis P. Barattini, Bernard Benesh, Millicent T. Bingham, W. Frank Blair, William Pierce Brodtkorb, Mrs. William H. Bush, Stanley A. Cain, F. Gordon Canston, Commercial Club of Chicago, José Cuatrecasas, Henry Dybas, P. W. Fattig, William J. Gerhard, Bert E. Grove, Biblioteca Minicipo of Havana, Hebrew University of Jerusalem, Gerald Keitel, Leon Kelso, Ralph T. King, Frederick Lincoln, Dr. Paul S. Martin, E. Morton Miller, Dr. Edwin L. Moseley, Dr. Juan José Parodiz, Bryan Patterson, T. Gilbert Pearson, Elmer S. Riggs, Dr. Daniel F. Rubin de la Bordolla, Lois S. Russell, San Diego Society of Natural History, Ivan T. Sanderson, Karl P. Schmidt, Sidney C. Smith, Dr. Morris Steggerda, O. A. Stevens, Leo R. Tehon, Viking Fund of New York, Paul Voth, Henry Miller, and Miss Miriam Wood.

NEW MEMBERS

The following persons became Members of Field Museum during the period from May 11 to October 15:

Contributors

Dr. Louis Schapiro*

Non-Resident Life Members

Mrs. Irene Stark Bennett

Associate Members

Gary Barthell, Harry P. Baumann, Dr. Elmo F. Brennom, Daniel D. Carmell, E. C. Christensen, Gordon A. Cooley, Dean W. Davis, Dr. John F. Delph, Laurence M. DuBois, J. W. Embree, Jr., Dr. W. Raymond Fallon, Dr. William W. Gibbs, Raymond G. Haskins, Ralph B. Howe, Miss Katherine J. Hudson, Mrs. W. A. Jackson, Dr. C. Helge M. Janson, Mrs. Mary M. Jeffreys, Mrs. C. A. Jones, Jerome J. Kahn, Miss Hilda M. Kemper, John H. Kraft, D. C. Kreidler, Sanford Lassers, Arthur L'Hommedieu, John Woodworth Leslie, John S. Lord, Mrs. George B. Martin, Jonas Meyers, Eugene Nufer, Grier D. Patterson, Charles A. Pollak, Harry Prince, J. J. Reinhold, Theodore W. Robinson, Jr., Arthur Rubloff, Mrs. Clive Runnells, Arnold C. Schuere, Joseph Sterling, John D. Swigart, James L. Taylor, Dr. J. Daniel Willems.

Sustaining Members

H. A. Treadwell.

Annual Members

Leslie P. Aggerbeck, Mrs. Eloise Parsons Baker, Mrs. Harold G. Barrett, Mrs. Joseph C. Belden, S. A. Bennett, Dr. Eugene Birchwood, Arthut T. Blake, Robert W. Blake,

Mrs. William F. Borgerd, Mrs. Edith L. Borough, Dr. Curtis B. Bowman, Mrs. E. M. Bowman, Miss Anne A. Boyd, P. D. Brook, William W. Brown, Harley N. Bruce, Mrs. Ralph E. Burkhardt, Tony Ciccone, Solomon Citterman, Roland F. Cohee, Jr., Harold Coleman, Charles H. Cooper, Mrs. Irwin Paul Daemicke, Miss Helen M. Dart, Mrs. James D. Davis, Dan Donaldson, Charles H. Dornbush, Frank L. Dorpols, S. M. Dover, Mrs. Henry A. Drefflein, Mrs. Arnold Epstein, Albert C. Fellingner, James R. Fitzpatrick, Mrs. G. R. Fouche, Fred W. Frank, David A. Freeman, Chester A. Gage, Harry W. Gefael, Edward Gordon, Mrs. George Gouch, Jay Gould, J. F. Green, Michael Green, Norman C. Green, Miss Eve Groom, Mrs. Harold A. Hancock, Mrs. L. C. Harbison, John C. Hardaway, Dr. Hubert F. Harman, Russell E. Harr, Deane S. Hazen, William S. Herrington, Howard H. Hilton, Mrs. Michael L. Igoe, Miss Mayde B. Johnson, R. C. Johnson, Mrs. Morgan B. Kent, G. A. Kenney, Franz K. Krag, Mrs. Ralph Henry Kramer, George A. Lane, Miss Kathryn Lochner, Gilbert L. Loek, Lawrence A. Lockwood, Lewis M. Long, Mrs. Henry H. Luning, Frederick W. Manning, Alfred W. Mansfield, Mrs. Sigurd Maseng, Auguste Mathieu, Miss Nellie G. McMahon, Neal F. Mears, Mrs. S. F. Mirabella, Erwin K. Miske, Mrs. Olivia Moldenhauer, Edward S. Molineaux, Samuel C. Moore, Mrs. J. E. Morgan, Milton H. Morris, Miss Harriet Linda Morrow, Richard Mueller, Mrs. J. I. Noest, Casper William Ooms, Russell L. Parrish, George H. Parrott, Mrs. Max G. Paulus, Earl E. Perreault, Douglass Pilling, Myron H. Post, Mrs. T. A. Potter, John W. Power, Paul W. Power, D. J. Powers, Frank M. Powers, Miss Lillian R. Powers, William F. Powers, William T. Reace, Miss Martha Renken, Lewis M. Rennie, Otto Romstedt, Mrs. N. H. Rosenthal, Mrs. Edgar P. Rupprecht, Mrs. Florence A. Rumbel, Carl Rune, Allen R. Schlade, Norman J. Schlossman, Mrs. Ralph T. Sollitt, Mrs. Charles H. Stresenreuter, Dr. Otto E. Strohmeier, Joseph P. Sullivan, Anton J. Tadrowski, Paul Tschampel, Lee B. Thomas, Ernest H. Thompson, E. Clifford Toren, A. E. Tregenza, Frederick W. Turner, James A. Turner, James A. Velde, James B. Vogel, E. Jerry Walker, Gary G. Walters, H. F. Wardwell, Mrs. Richard W. Watkins, Rudy W. Weber, Mrs. Grace Adams Whitesel, Walter L. Woldhausen.

NATURALIST AT LARGE

By Thomas Barbour

Dr. Wilfred Osgood, Curator Emeritus of Zoology, says of this book:

"To me, this is the best book of the year and the best for many years. The author is an all around naturalist of the so-called old school but in a modern setting in which he is well known for his warmth, humor, and forthrightness. His telling of incidents in a most varied career as a traveling naturalist and as Director of the 'Agassiz' Museum at Harvard makes fascinating reading which should have a wide appeal to all classes of readers."

On sale at THE BOOK SHOP OF FIELD MUSEUM—\$3.50. Postage paid by the Museum on mail orders.

*Deceased.

Field Museum News

Published Monthly by Field Museum of Natural History, Chicago

Vol. 14

DECEMBER, 1943

No. 12

VICTORIA REGIA, LARGEST OF WATER LILIES, SHOWN IN NEW HABITAT GROUP

BY B. E. DAHLGREN
CHIEF CURATOR, DEPARTMENT OF BOTANY

A new plant habitat group has recently been added to the botanical exhibits. It represents an association of aquatic plants in their natural environment, and is the fourth of the small series of habitat groups in Martin A. and Carrie Ryerson Hall (Hall 29). These are designed to provide for that hall, devoted to Plant Life, a few outstanding examples of plant formations representing widely different environments.

The scene reproduced in the new exhibit is from the junction of the Tapajós River with the Amazon. At this point silt from the two great rivers has produced a long spit of mud separating the waters of the two streams for a considerable distance. This alluvial land is cut into islands by transverse channels and covered in its more substantial portions by a dense growth of recent tropical

vegetation including, especially, spiny leguminous shrubs and trees, and weed-like Cecropias, topped by some slender Assai palms, all of them evidently survivors of many inundations. The shallow channels, as well as the many backwaters enclosed by the ragged margins of the land, afford protection for a large variety of aquatic plants, some floating, others anchored in the mud, growing there from seed or seedlings either brought down river by the current or produced on the spot. That those not securely anchored are soon carried away, is suggested by the masses of floating plants moving down stream at all times, alone or in company with trees or whole floating islands of vegetation undermined by the current and recently torn from the river banks, or old accumulations released from their moorings by sudden high water in one or another of

the numerous tributaries of the great river.

In some of the more sheltered shallower channels, colonies of water lilies, *Victoria regia*, the largest of all freshwater aquatics, appear to be well established. Though subject, like everything on the river, to the vicissitudes of floods, and not present in the

afterwards the plant was found in the La Plata river system by Bonpland and soon afterwards by D'Orbigny. It was found again on the Amazon by the botanist Poeppig who descended the river from Peru, and finally in 1837 in the Guianas by Robert Schomburgk during his Venezuelan bound-

ary explorations on behalf of the British government. Schomburgk proposed naming the plant in honor of Queen Victoria.

On the Amazon the popular name of the plant is "forno de jaçaná" (the jaçaná's oven, or frying pan), the jaçaná being a long-legged plover-like bird frequenting the huge skillet-shaped leaves in its search for food. In the Paraná region the pods are said to be gathered by the Indians, and the seeds, according to Bonpland, "maiz del agua" (water maize), are ground for flour.

Introduced into cultivation in tropical gardens and in the temperate zone in

places where young plants may be grown in greenhouses and kept alive for outdoor display in summer, the largest of all water-lilies never ceases to be an object of interest and admiration. The large white flowers are short-lived. They open in the evening, closing, at least partly, in the morning, to open again at dusk. After the second night they begin to decline, lose their brilliance, turn pinkish, wilt and soon disappear from sight. The leaves, on the other hand, last a long time. They make their appearance at the surface of the water as tightly rolled spiny buds which gradually unfold and enlarge in widening circles to form flat shallow pans four to five feet or more in diameter, smooth on the upper surface, but reinforced on the lower surface by a radiating network of stout ribs, channeled for buoyancy by large air spaces and spiny like the stout leaf and



GIANT SOUTH AMERICAN AQUATICS

Plant life of Brazilian streams, as reproduced in habitat group representing junction of the Tapajós and Amazon Rivers. This exhibit was recently added to Martin A. and Carrie Ryerson Hall (Hall 29).

great numbers reported from certain other localities, they are known to have existed there for a long time. They were observed in the same place almost a hundred years ago by the well-known English botanist Spruce who sent specimens of them to Europe. Their large prickly seedpods mature under water and, though not actually buried in the soil, stick firmly in the mud of the bottom and will no doubt insure reseeding even if the parent plants should be carried off by floods.

The huge water-lily is indigenous in much of the territory covered by the larger rivers of eastern South America, from La Plata to the Guianas. It was first discovered on one of the Amazon tributaries in 1807 by the Bohemian botanist Haenke who was sent by the Spanish government to investigate the vegetable products of Peru. Shortly

flower stalks. The plant is a perennial with a well developed rootstalk. The flowers are apparently insect pollinated. They are visited, as soon as they open, by a black beetle as large as a coffee bean.

The other conspicuous flowering plant of the habitat group is a water-hyacinth resembling in all essential respects the blue-flowered South American water-hyacinth which, as an escape from cultivation in the southern states, has become a pest and hindrance to navigation in some of the rivers of Florida and the Gulf states. The species growing with the *Victoria regia* forms well rooted plants which have long submerged stems and lack the swollen leafstalks which serve its more common and familiar relative as floats.

An aquatic grass, with stout, almost woody root stalks, lines all the margins of the channel and invades the shallow water where it competes with the water-hyacinth for space. A small floating water fern completes the special plant association over which the *Victoria regia* presides.

The reproductions of the plant-forms in the new habitat group, and the installation, are the work of Emil Sella, Chief Preparator, aided by Milton Copulos, David Henner and others. The landscape which forms the background was painted by Staff Artist Arthur G. Rueckert. The material on which it is based was collected by several Field Museum expeditions.

MRS. J. N. RAYMOND GIVES \$6,000 FOR CHILDREN'S PROGRAMS

The Museum received a gift of \$6,000 last month from Mrs. James Nelson Raymond, for the support of current activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. The Foundation was established by Mrs. Raymond in 1925 with an endowment of \$500,000 and she has made additional gifts each year since that time. With the latest gift, the total of these additions now amounts to \$93,000.

Due to her interest and faithful support, the Foundation has through the years been enabled to expand its activities constantly, and provide more and more supplementary scientific education for children in the schools of Chicago and suburbs. Approximately 250,000 children benefit each year from the free series of spring, summer and autumn motion picture programs which the Foundation presents in the James Simpson Theatre of the Museum, and from the extension lectures given in school assemblies and classrooms by members of the Raymond Foundation staff. Other work carried on by the Foundation includes the publication of stories for children, radio programs, lecture tours at the Museum, special training courses to assist teachers who conduct classes in natural science studies, and various related activities.

ANTHROPOLOGICAL PROBLEMS

BY PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

Anthropological research on cultural and racial contacts has world-wide implications and is of vital importance in the entire range of the sciences of man. Other sciences need the data and results of anthropology. Research will go further and be more worth while if it is correlated with other researches. The botanist studying the origin and distribution of corn should know the distribution of corn both in space and time. These data the archaeologist would be able to give him. Researchers in the field of medicine need to call on the anthropologist for information on the food habits and the health of various peoples; on the physical anthropologist for the apparent effects of climate on race; and on the ethnologist for information as to taboos and other social customs that may affect the prevention and control of diseases. These are but a few examples of ways in which anthropology can serve our society.

Anthropological research aims to be a contribution to the understanding and control of life. Its laboratories are the cultures of primitive people, and its purpose is to derive from them some general knowledge of human ways, not merely to collect miscellaneous and curious information. The changes that occur in our own more complex culture are more easily understood when similar changes are studied in simpler primitive societies where factors and situations are relatively few.

PSYCHOLOGY OF CULTURES

If specimens and photographs help in securing and explaining the complete psychological pattern of a culture, then they are carefully collected and brought back to the Museum; but they are collected only in order to help give our audience a picture or an idea of how a given people of a given culture meet their daily problems and manage to exist and thrive in an unfriendly, poor world. Some expeditions do no collecting; they merely try to reclaim some fragments of the culture of a people from whom our early Museum men hurriedly gathered thousands of miscellaneous specimens which at present have no special meaning or value to us or to anyone else.

In the field of exhibition techniques we are interested in interpreting facts about mankind to an interested lay audience. This means that we no longer jam our exhibition cases with a tiresome and duplicative array of specimens distressingly similar and monotonous. Rather, we insist on using a few specimens, placed on attractively colored backgrounds, in order to illustrate some phase of man's history. A beginning has been made in Hall B—Archaeology of the New World. In this way, we can convey easily and quickly to our audience whether a given culture is advanced or not, is based on farming and hunting, or has or has not

been greatly influenced by its environment.

The emphasis of our work has now been shifted from pure research as such to research which will aid and benefit our society. We are eager to educate and to give help to all those who desire to learn. We still cater to specialists and professionals providing them with necessary factual material, but we are also interested in reaching as many people as possible and influencing them profoundly. We can do this through publications, exhibitions, expeditions, and research.

FUTURE DEVELOPMENTS

In what direction does the department hope to reach out in the future?

It seems certain that the results of research in Anthropology must be applied more and more to our daily life and problems. The field of Applied Anthropology is a fairly new one but is growing rapidly. Applied Anthropology uses all of the present disciplines of anthropology plus those of psychology, psychiatry, and other social sciences. It endeavors to interpret and smooth out the conflicts in our own society. The day may come when we shall have a Curator of Applied Anthropology.

We shall certainly want to continue improving our exhibitions, using what we have already accomplished in Hall B as a springboard for future changes. Before we can go much further along this path, it will be necessary to study the psychological habits of our visitors in order to know how to meet their requirements. This is virtually an unexplored field and much work needs to be done.

To predict further would only lead us into a fool's paradise. It is impossible to state now what we are going to do except in a most general way. Most of all, it is imperative for us to be alert and receptive to changes and new ideas; to lead the procession rather than bring up the rear. We must study man's desires, impulses, and quirks so as to help society control the conflicts, both major and minor, which create unstable, even psychotic tendencies and bring about unnecessary unhappiness. Wherever these studies of Man lead us, we shall go.

Games With String

The string figure game known as "cat's cradle" is widely played among African children. Complicated figures are constructed, and competitions are held in which children challenge one another. Speed and accuracy decide the winner. Such string games are played by native tribes of Australia, and seem to be almost world-wide.

MUSEUM TO CLOSE CHRISTMAS AND NEW YEAR'S DAY

in order to permit as many employees as possible to spend the holidays with their families.

STRANGE SIGHTS, BOTH LIVING AND INANIMATE, FOUND ON DESERT HIGHWAY OF PERU

BY KARL P. SCHMIDT
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

The coastal plain of Peru, between the Andes and the Pacific, though wholly within the tropics, is untropically cool and as untropically barren.

These surprising and important geographic features result from the remarkable Humboldt Current that washes the Peruvian coast—an oceanic current of quite a different and opposite type from our more familiar Gulf Stream. The cold waters from the Humboldt Current well up from the bottom of the Pacific in a narrow belt along the west coast of South America. They bring up with them the fertility of the deep waters and thus become the scene of an extraordinary wealth of marine life. This contrasts the more remarkably with the barrenness of the coastal desert, which is in its turn due to the effect of the current on air temperatures. The combination of desert land and rich marine life results in the extraordinary phenomenon of the guano islands that fringe the Peruvian coast.

On the coastal shelf itself, the alternating rocky ridges and sandy plains form one of the most extreme of desert regions in the world, on which one may travel for miles without seeing a living plant or animal. The more familiar desert of the North American Southwest, with basically the same substratum of sand and rock, is rich with desert plants specifically adjusted to arid conditions, and supports an equally rich and no less remarkable animal life adapted to the desert environment. Thus the Colorado desert (of Arizona, adjacent California, and the Mexican state of Sonora) gives the impression of an ancient desert area, in which time has been available for the evolution of both vegetation and animal life; the Peruvian desert strip, contrariwise, seems to be at least relatively a young desert.

SINGLE LANE HAIRPIN CURVES

The absence of tropical jungle has a conspicuous man-made result, a reflection of our automobile-conscious civilization. The ambitious and romantic project for a highway to link the two Americas—the Pan American Highway—has its Peruvian link completed for the more than a thousand miles from the Ecuadorean border to Bolivia and Chile. The worst difficulty that faced the Peruvian engineers was probably the moving sand dunes produced by the eternally pounding waves of the Pacific. Low but sturdy bridges cross the rivers which, though numerous and subject to flood, are small. Where spurs from the mountains extend to the sea, a winding passage has been blasted, not always wide enough for two cars, and sometimes with a hairpin turn, quite unprotected, above a dizzy drop. The Peruvian oil field in the northwestern part of the country not only provides gasoline at a reasonable price

for the cars that are to run on the roads, but supplies the asphalt to surface them. A ribbon of fine "black top" road extended for hundreds of miles in each direction from Lima in 1939 when the writer traveled over it as a member of the Magellanic Expedition

POST-WAR PICTURE

The dream of driving an automobile from Alaska to the Straits of Magellan is likely to be realized in the post-war period. One long and important link of the Pan American Highway already completed is that extending along the coast of Peru. Something of the interest of the desert region in this section is told in the accompanying article by Mr. Schmidt who has already traversed it.

of Field Museum. It may now well extend the whole length of the country. How would a thinly populated country, like Peru, use its roads, and especially an international highway? And what would one see between Chiclayo at the north and Lima, and between Lima and Arequipa at the south? Would not a trip on the Peruvian highway be unbearably monotonous in this most barren of deserts? The answer to the first question requires a separate essay. The present one will detail a naturalist's impressions of the coastal landscapes.

TRAVEL BY TRUCK

A brief digression may set forth the mode of travel to which my son and I became converts—and not merely converts, but most active propagandists! We had the inevitable problem, as a scientific party, of moving considerable equipment from Lima to Arequipa, some thirteen hundred kilometers. With our varied interests, the expedition baggage (recalling the apt *impedimenta* of the Romans) had grown to half a truck load. The road to Arequipa was officially opened three days after our arrival in Lima. Why not be the first *gringos* to travel over it, and as our equipment required a truck, why not travel with the duffle under our own eyes, as passengers on the truck? An estimable friend and companion predicted that we might not only

be the first *gringo* truck riders over the Arequipa road, but the last as well. We sent him on by airplane to lay plans for our collecting in southern Peru, and John and I joined a caravan of two brand new Detroit-built trucks (two-tonners) with the *Arequipa Express*. We soon learned to avoid the home-made cab, with its flat board seat and vertical back. With a blanket for padding and ropes for hand holds, we rode instead on top of the high-piled load. There could be no better vantage point for anyone whose soul is moved by the glorious panorama of mountain and sea and sky, juxtaposed against desert and cultivated valley.

VIVID GREEN OASES

The great central ranges of the Andes wall off the coastal desert from the vast and dense tropical forest of the Amazonian side of Peru. The Andes themselves are barren for the lowermost ten thousand feet; but, as they rise to the zone of ice and snow, some thousands of feet of the upper levels of the mountains below the snow line are well watered. The run-off from the snow fields and mountain lakes gathers to form the more than fifty rivers that cross the desert plain to the Pacific. These are insufficient to water the plain, but they supply sufficient water to convert the valley floors themselves into oases of vivid green. These, nursed by irrigation, sometimes extended upward on the sides of the valleys in rock-walled terraces, mementos of the Inca civilization.

The irrigated valleys may spread out in a broad and fertile delta plain, as at Ica and Pisco, supporting a considerable population on the *haciendas*, and often a city of some size as well. Or they may be confined to a steep-walled canyon, whose flat bottom forms a ribbon-like linear oasis, invisible



HOW HIGHWAY MASTERS ANDEAN SLOPES

After the war many North Americans may drive their cars over this road on their way to still farther regions of South America.

until the truck arrives at the very canyon brim. Or, perhaps most charming of all, we may skirt a valley so small that it supports only a single family, with a single hut, a tiny field of corn, a single goat, and a single burro: evidently it is inhabited to its full human carrying capacity, although there may be no other habitation within forty miles. Such a self-sufficient human

lypts, interspersed with fields of small grain and of the staple corn.

North of Lima the valleys are still different. Many are devoted mainly to sugarcane, in vast flourishing plantations. South of Chiclayo one may see fields laid off in tiny squares for aquatic rice culture like that of the Orient. The last great valley to the south, that of the Majes River, is



FIELD MUSEUM EXPEDITION ON PAN AMERICAN HIGHWAY

Traveling in this truck, Chief Curator Schmidt and his companions were the first North American travelers to motor from Lima to Arequipa. Note curious desert vegetation at roadside.

unit may draw in part on the sea, with a private sheltered beach for a fishing boat between jutting walls of rock pounded by Pacific surf on either side.

APPLES AND BANANAS GROW SIDE BY SIDE

The valley oases not only afford the most welcome and delightful relief from the intervening stretches of rock and sand, but offer a succession of surprises in the contrasts between the products which appear from each one to the next. Long-staple cotton is the principal product in the broad valley mouths south of Lima. A succeeding valley will be found to be wholly devoted to apples, the rectangular orchards bordered by lines of banana plants. Such a juxtaposition of temperate and tropical fruits at sea level is scarcely to be found beyond the influence of the Humboldt Current. Then there may be a broad valley entirely devoted to olive trees, their gnarled trunks attesting their great age, and their gray-green foliage a delight to the eye. The more remote the valley from Lima, the more diversified and self-sufficient will be its agriculture. Such valleys will have adobe-walled pastures, often set off by rows of willows or of euca-

famous for its oranges—'camanetas'—taking their name from the town of Camaná, at the sea.

WHALE HUNTING RECALLED

The Pan American Highway sometimes parallels the coast at a considerable distance inland, but it frequently comes close to the sea, and thus brings the traveler into contact with the remarkable beach zone. Bleaching skeletons of whales remind us that our North American forbears hunted the leviathan in these waters a hundred years ago. This hunting was as much conditioned by the presence of the Humboldt Current as are the geographic features already mentioned. The numerous carcasses of guano-birds attest that the great current is not in its normal cycle, and dying cormorants, apparently too weak to fly, may be seen moving inland to contribute to the wave-washed zone of flotsam and jetsam which consists of sticks, pumice, kelp, and the bones of a great variety of marine creatures.

Our caravan stops at intervals to permit rest for the drivers, to let us all stretch our legs, and to test and cool the precious new tires, pride of the *Arequipa Express*.

A few minutes stroll along the beach yields a curious insight into this graveyard zone. The beach may be watched over by a row of gigantic condors, properly inhabitants of the dizziest mountain heights, but remarkably able to adjust to the enormous differences of air pressure between sea level and the snow line at 16,000 feet.

SCAVENGER LIZARDS

The carcasses of dead fishes, cormorants, and sea lions are promptly fly-blown, and the carrion flies and their maggots afford food for insect eaters. The most conspicuous living creature in this trash proves to be a good-sized lizard, *Tropidurus peruvianus*, found here in countless hundreds, in a nearly continuous ribbon of population from the equator to temperate Chile. The large males are richly colored with brown bars and a dark throat, and are as much as eighteen inches long. The much smaller females are gray. Juvenile males, gray like the females, have a vivid flash-mark of orange or yellow in the groin, a most curious kind of "recognition-mark" the function of which is not evident. While this lizard may range inland onto the mountain slopes to as much as ten thousand feet altitude, it nowhere develops such a dense population as in the beach zone.

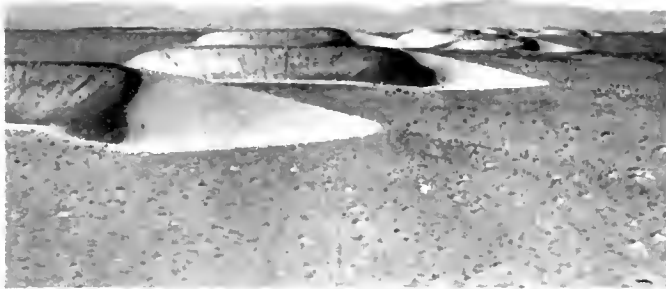
AWESOME VISTAS

While our chauffeurs gather a boxfull of sea urchins, which we crack open like eggs and eat raw, we may be charmed by the aquatic gamboling of a marine otter—an animal which, happily, is not quite so near extinction as its relative, the sea otter of the northern Pacific.

The desert itself, aside from an intrinsic interest for the extreme of barrenness, exhibits numerous memorable landscapes. The spurs of mountain that buttress the first Andean chain, themselves rising to great altitudes, are mostly of reddish rock. They divide and subdivide in an endless series of arroyos and crests that somehow make me think of some vast crashing chord of music with all of its harmonics frozen into physiography.

"HANGING DUNES"

Where sand sweeps inland from the sea beach, it may rise into great dunes, and into dunes of astonishing variety. The familiar types of coastal dunes are especially abundant in northern Peru and at some places between Pisco and Lima. Occasionally the steady winds from the Pacific carry sand far inland, resulting in vast "hanging dunes" like the one at Nasca which covers the top of a mountain spur at several thousand feet of elevation, without any very evident source. Such wind-borne sand is carried up the escarpment at the coast to the nearly level plateau below Arequipa at four thousand feet altitude. There the sand gathers in the marvelous "Barkhan Dunes" that march inland to the main



"THE BARKHANS"—TRAVELING DUNES

Strange sand formations of nearly equal size which move across the Peruvian desert, holding their shape as the wind propels them. After reaching normal height of six to eight feet, they "give birth" to "infant dunes" instead of growing larger.

Andean range. These curious dunes are of nearly equal size, of crescentic form, with the horns pointing forward in the direction of travel. As the sand accumulates in them, instead of increasing beyond their normal size (with a height of six or eight feet), crescentic infant dunes are given off at the horns. These have long attracted the attention of travelers by rail from Mollendo to Arequipa. They are vastly more numerous along the road from Arequipa to Camaná, before the road drops steeply into the valley of the Majes.

SEA FOG ENCOURAGES PLANTS

Where the fog sweeps in from the sea a strange bromeliad vegetation may develop, covering the ground with great mats of a curious rootless ground plant, whose relatives are everywhere familiar in the humid tropics as epiphytes on trees. Our familiar "Spanish moss," *Tillandsia*, belongs to this group of plants. The ground bromeliads are so gray that they scarcely appear to be living. These mats of tillandsia lie at right angles to the direction of the wind, and apparently grow toward it, dying off at the leeward edge.

Occasional valleys, for no superficially evident reason, develop a uniform growth of a columnar cactus on their steep walls. In still other places the rocks may be covered with a delicate film of green, perhaps of lichen or of alga, dependent on the fog from the sea. One or two valleys only, in all the long series south of Lima, are uninhabited, and exhibit no trace of former habitation by man. In these the valley floor has a sparse vegetation of bushes, and occasionally displays the mesquite-like algaroba tree.

"SPRING" IN OCTOBER

The most wonderful vegetational phenomenon in Peru is the rich seasonal herbage known as the "lomas," produced on certain slopes close to the sea and watered by the condensation of fogs sweeping inland. Of

all the contrasts in the Peruvian landscape, this is the most startling. On our trip to Arequipa early in August we encountered the wholly plantless ridges and plains, the sparse coastal vegetation, the occasional areas covered with tillandsias, and the occasional cactus-covered slopes between the succession of oasis-like irrigated valleys. We were told that the port of Chala served as a cattle shipping center; and we expressed some polite skepticism as to where cattle might come from

for shipment. On our return in mid-October, after crossing the ever barren plateau with its Barkhan Dunes, dipping down into the orange grove oasis at Camaná and again approaching Chala, we suddenly found ourselves on seaward-facing slopes covered with knee-deep herbaceous plants, rich with a great variety of flowers. Lilies were especially beautiful and varied. The air was filled for miles with an odor like that of heliotrope. Birds courted and sang in these meadows; especially memorable were vivid vermilion flycatchers. We seemed suddenly to have come out of an age-long winter into the full bloom of a northern spring. As we descended the slopes, the barren sand and rock reappeared at about three hundred feet above the sea; a few miles beyond Chala we drove out of the flower-scented atmosphere into a long stretch of the most barren desert.

This charming and curious phenomenon of the lomas vegetation is limited to the coastal region of Peru, more especially of the region from Lima southward. It forms only in an altitude zone between three hundred and three thousand feet above sea level. It is rather exactly governed by topographic and climatic conditions, so that it will be richly developed in one valley and absent or feebly developed in an adjacent one that seems little different. The Chala region is known as the richest of these lomas areas. A few miles inland however, desert conditions prevail throughout the year.

LAND OF THE INCAS

The shadow of the Inca and pre-Inca civilizations lies everywhere upon the Peruvian landscape. The cultivated valleys are ter-

raced far above the present level of cultivation, often into tiny rock walled shelves that could only have been watered by hand. The desert plains often bear the most astonishing adobe ruins; vast citadels on hilltops, some doubtless temples and others fortresses; great cities that must have hummed with life; and mortuary cities that seem to have been used by the living only to bury their dead. All these attest to the once dense populations of the coastal region.

The traveler on the highway, who is hurried past the ruins, and who cannot delve into the panoramic story of pre-colonial Peru, is afforded an even more impressive evidence of the populations of past ages by the incredible abundance of human remains. In the mortuary city of Cajamarquilla, above Lima, scattered arm and leg bones are to be seen everywhere, with an occasional skull left in a niche in the adobe wall. In a road cut, a whole skeleton is seen exposed, the bones rolling down into the roadway to be ground under the wheels of the passing vehicles. On top of a hill one may see a grave neatly dug out for its pottery (the chief materials of study for archaeologists), the skeletons left neatly laid out beside the pit. Or in a sandy stretch the wind may have uncovered a helter-skelter tangle of human skulls, limb-bones, pelvises, and vertebrae.

CREVICE JAMMED WITH SKELETONS

Lest one think that this is a phenomenon only of the coastal region, I may mention a rock crevice on the side of the mountain in the far off valley of the Urubamba (beyond Cuzco), ten thousand feet above sea level, which was crammed with human skeletons. Thus the Peruvian past, with its irrigation civilization, is visibly linked to the modernity of automobile traffic on an asphalt-covered highway.

Such are the glimpses of Peru to be had from the top of a swaying load on a two-ton truck on this thousand-mile link in the *Carretera Pan-Americana*—destined to see great caravans of freight and travelers in the not too distant future.



AREQUIPA AND MOUNT MISTI

Part of Peruvian city at end of desert highway. Note snowcap atop symmetrical cone of the volcano in background.

Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893
Roosevelt Road and Field Drive, Chicago
TELEPHONE: WABASH 9410

THE BOARD OF TRUSTEES

LESTER ARMOUR	STANLEY FIELD
SEWELL L. AVERY	SAMUEL INSULL, JR.
W. MCCORMICK BLAIR	CHARLES A. MCCULLOCH
LEOPOLD E. BLOCK	WILLIAM H. MITCHELL
BOARDMAN CONOVER	GEORGE A. RICHARDSON
WALTER J. CUMMINGS	THEODORE ROOSEVELT
ALBERT B. DICK, JR.	SOLOMON A. SMITH
HOWARD W. FENTON	ALBERT A. SPRAGUE
JOSEPH N. FIELD	SILAS H. STRAWN
MARSHALL FIELD	ALBERT H. WETTEN
	JOHN P. WILSON

OFFICERS

STANLEY FIELD	President
ALBERT A. SPRAGUE	First Vice-President
SILAS H. STRAWN	Second Vice-President
ALBERT B. DICK	Third Vice-President
*CLIFFORD C. GREGG	Director and Secretary
ORR GOODSON	Acting Director and Acting Secretary
SOLOMON A. SMITH	Treasurer and Assistant Secretary

* On leave in active service as a Colonel in the United States Army.

FIELD MUSEUM NEWS

EDITOR

WILFRED H. OSGOOD, Curator Emeritus, Zoology

CONTRIBUTING EDITORS

PAUL S. MARTIN, Chief Curator of Anthropology
B. E. DAHLGREN, Chief Curator of Botany
HENRY W. NICHOLS, Chief Curator of Geology
KARL P. SCHMIDT, Chief Curator of Zoology

MANAGING EDITOR

H. B. HARTE, Public Relations Counsel

Members are requested to inform the Museum promptly of changes of address.

DECEMBER 25, 1943

. is still far from being a day for rejoicing in the accustomed pattern.

Who could say "Merry Christmas" to a boy on his way into battle—or, at home, to his mother or father—without a feeling of revulsion at the hollowness and incongruity of the words as he pronounced them?

While the thunders of war still reverberate, the Museum can express to its Members, its friends, and its staff—those at home and those in the service of the Nation—only the wish that the hopes of all which have risen so notably since the last Yuletide, may culminate in Victory during 1944, and that another year will not have to pass without an unqualified "Merry Christmas."

CHICAGO N.H.M. BULLETIN IS NEW NAME OF NEWS

The change in name from Field Museum of Natural History to Chicago Natural History Museum becomes effective this month, and it has therefore become necessary to change also the name of this periodical for Museum Members.

This is the last issue to bear the name FIELD MUSEUM NEWS. Beginning with the January, 1944 issue, this publication will be called CHICAGO NATURAL HISTORY MUSEUM BULLETIN. The seemingly obvious change which might have been expected, to "Chicago Museum News," was impractical because that name seemed to imply a

publication reporting the news of all Chicago museums including those in fields not covered by this institution.

PUBLICATION SCHEDULE CUT

During 1944, due to the absence of so many members of the Museum staff on the urgent business of war, and the necessity imposed upon all publishers to conserve paper supplies, THE BULLETIN will be published bi-monthly instead of monthly. The issues will appear in January, March, May, July, September and November. Apart from this reduction in the number of issues, no other change is at present contemplated.

BIOLOGICAL SUPPLY HOUSE AIDS ANATOMY DIVISION

The Museum benefits from the friendship and co-operation of innumerable individuals as well as organizations of all kinds. These include especially the local zoological gardens and the commercial biological supply houses which supply specimens, charts and microscope slides to schools. In Chicago, the General Biological Supply House has served this museum in a unique way by embalming rare animals of all kinds. Since the time when the Museum's Division of Osteology took up a research program, with a few miscellaneous alcoholic specimens and the gleanings from several expeditions assembled and bravely labeled "Division of Anatomy," the General Biological Supply House has given its whole-hearted co-operation, and has made generous contributions of time and materials.

The first major acquisition that made the aid of the supply house of vital importance was in connection with Su-Lin, the giant panda. This animal had long been a subject of zoological argument, and no thorough dissection had ever been made to establish its relations with the raccoons on one hand and the bears on the other. If the necessary detailed studies were to be done, Su-Lin's body could not be embalmed piecemeal, and the Museum had neither the experience nor the necessary equipment for modern embalming. The General Biological Supply House came to our aid, and soon Su-Lin was returned not only full of embalming fluid, but with his blood vessels filled with colored starch ready for the most delicate dissection ("she" turned out to be "he" on the dissecting table). This started a Noah's ark trek to the supply house. Su-Lin was followed by another panda, a lesser panda, a gorilla, a sloth bear, black bear, *bassariscus*, *binturong*, palm civet, raccoons, skunks, weasel, kinkajous, and many others. Some were injected with colored starch, others by the latest latex method. In all, hundreds of gallons of preserving fluid were used up. Nor did the biological supply house balk when asked to embalm a baby giraffe. No doubt the recent death of an elephant at

Brookfield Zoo occasioned bated breath and averted eyes at the GBSH.

In the course of studies at the Museum on carnivorous mammals related to Su-Lin, the General Biological Supply House presented various embalmed specimens without charge. The Museum has often served the supply house with information and identification of specimens. Their counter-services now greatly outweigh our aid in the past. The Museum is especially indebted to the expert embalmer at the supply house, Mr. Arnold Blaufuss, as well as to Mr. A. S. Windsor, and to the president of the company, Mr. C. Blair Coursen. —M.B.

FIELD MUSEUM HONOR ROLL

Now in the Nation's Service

Army

THEODORE ROOSEVELT, Trustee—Brig. Gen.
GEORGE A. RICHARDSON, Trustee—Lt. Col.
CLIFFORD C. GREGG, Director—Colonel, G.S.C.
DR. JOHN RINALDO, Associate, Southwestern Archaeol.—Staff Sgt.
DR. SHARAT K. ROY, Curator, Geol.—Capt.
D. DWIGHT DAVIS, Curator, Anat. and Osteol.—Corp.
BRYAN PATTERSON, Curator, Paleontology—Pvt.
EMMET R. BLAKE, Asst. Curator, Birds—Special Agent, War Dept.
RUPERT L. WENZEL, Asst. Curator, Insects—Capt.
HENRY S. DYBAS, Assistant, Insects—Pvt.
WILLIAM BEECHER, Temp. Asst., Zool.—Pvt.
HENRY HORBACK, Asst., Geol.—Pvt.
JAMES C. MCINTYRE, Guard—2nd Lt.
RAYMOND J. CONNORS, Guard—Pvt.
FRANK J. DUTKOVIC, Janitor—Pvt.



39

Navy

LESTER ARMOUR, Trustee—Comdr.
SAMUEL INSULL, JR., Trustee—Lieut. Comdr.
JOSEPH NASH FIELD, Trustee—Lieut.
COLIN CAMPBELL SANBORN, Curator, Mammals—Lieut.
DR. ALEXANDER SPOEHR, Asst. Curator, N. Amer. Ethnol.—Lieut. (j.g.)
LOREN P. WOODS, Asst. Curator, Fishes—Ensign
JOHN W. MOYER, Taxidermist—Ch. Specialist (Bur. Aeronautics)
PATRICK T. MCENERY, Guard—Master-at-Arms
JOHN SYCKOWSKI, Guard—Ch. Commissary Steward.
GEORGE JAHRAND, Guard—Ch. Water Tender
CLYDE JAMES NASH, Guard—Ch. Gunner's Mate
NICHOLAS REPAR, Printer—Aviation Machinist's Mate 2C.
MORRIS JOHNSON, Carpenter—Carpenter's Mate 2C.
HERBERT NELSON, Painter—Painter 1C.
ELIZABETH BEST, Guide-Lecturer—Ensign, WAVES
MARIE B. PABST, Guide-Lecturer—WAVES

Marine Corps

MELVIN A. TRAYLOR, JR., Associate, Birds—1st Lt.

Coast Guard

M. C. DARNALL, JR., Guard—Ensign
JOHN MCGINNIS, Guard—Ch. Boatswain's Mate

Other Services

RUDYERD BOULTON, Curator, Birds—Staff of Office of Strategic Services
BRYANT MATHER, Asst. Curator, Mineralogy—Civilian Worker, Corps of Engineers, U.S. Army
LLEWELYN WILLIAMS, Curator of Economic Botany—on special service for U.S. Government
DR. JULIAN A. STEYERMARK, Asst. Curator, Herbarium—field work for Board of Economic Warfare
DR. C. MARTIN WILBUR, Curator, Chinese Archaeol. and Ethnol.—Staff of Office of Strategic Services

FIELD MUSEUM OFFERS AID TO CHRISTMAS SHOPPERS

Would you like to avoid the rush and confusion of Christmas shopping? Field Museum makes it possible for you to buy and send your gifts while sitting cozily at your desk in your own home or office.

You can avoid wrapping packages, and standing in line at the post office to have them weighed, stamped, and insured.

The Museum offers its services in two forms. All you need is a pen—we even furnish the postage.

Here are the plans:

1. *Christmas Gift Memberships in the Museum.* With this issue of FIELD MUSEUM NEWS there are enclosed Christmas Membership application forms, and postage-prepaid envelopes for returning them. All you need to do is designate the name of the person you wish elected to membership, and send the form in with your check. The Museum will handle all details, sending the recipients attractive Christmas cards notifying them that they have been elected Members of this institution through your courtesy. With the card will be sent information about their privileges as Members, as well as the regular Membership cards (and Certificates in the case of Life and Associate Members).

2. *Services of the Book Shop of Field Museum.* The Book Shop is prepared to furnish books, endorsed for scientific authenticity by members of the Museum staff, for both adults and children. Also, the Book Shop has in stock a wide selection of other appropriate gifts, such as book ends, illuminated globe-maps of the world, and animal models suitable for use as library decorations or as toys for children. You are invited to browse in the Book Shop during part of your next visit to the Museum. Where desired, the Book Shop will handle mail and telephone orders, and will undertake all details in connection with wrapping, and the dispatching of gift purchases to the designated recipients, together with such forms of greeting as the purchaser may specify.

Everything for Science— Even During War!

The following is from a letter received by Dr. Fritz Haas, Curator of Lower Invertebrates, from a Chicago boy in an Army training camp:

"I have more snails of the same variety as sent before and some different kinds. I think I shall send everything soon. Some of my new snails are in an encysted stage like the ones sent before. Here is why a few are damaged: I collect them while I practice advancing on an enemy position. You get down on a split second notice, regardless of where you fall. Naturally I get bumped all

over and the snails in my pockets suffer, as you can readily see. Yesterday I found some as I lay crouched behind a bush waiting to rush forward, and my advance was slowed down. Theoretically I'm dead now for offering too much target, but—everything for science."

MUTILATED BRIDES

BY WILFRID DYSON HAMBLY
CURATOR OF AFRICAN ETHNOLOGY

Over the years, various articles in FIELD MUSEUM NEWS have brought to attention many of the curious customs of modern primitive peoples for preparing their boys and girls for tribal life, especially matrimony.

The knocking out of teeth as a test of endurance during initiation ceremonies is a fairly common one, especially among tribes of Australia. But the knocking out of upper central incisors from the mouths of young women who are contemplating marriage is a custom by no means well known. This practice is apparently peculiar to the inhabitants of the south Pacific island of Malekula (in the New Hebrides group).

In this museum's collection of skulls from Malekula, assembled by the late Dr. Albert B. Lewis who was leader of the Joseph N. Field Anthropological Expedition to the South Sea Islands (1909-13), there is evidence of the custom of tooth extraction during youth. One might have thought that it was bad enough to have one's skull misshaped by pressure during infancy, but in addition to that the girls suffer the loss of the two upper central teeth.

This was certainly a very general custom. Out of twenty female skulls, seventeen indicate the ante-mortem loss of the upper central incisors. Other teeth are, of course, often lacking. It is seldom that we can get skulls with a complete dentition, but it is clear that extraction of the upper incisor teeth was made during early life, because the bony border is entirely healed over. At the side of this space are holes from which there has been post-mortem loss of teeth. One skull shows clearly that the incisor teeth were not extracted but were broken off very close to the gum; the roots can be seen quite plainly.

ESSENTIAL SOCIAL RITE

As far back as 1876, a scientist in the Royal College of Surgeons, London, who was examining female skulls from Malekula, remarked on the ante-mortem loss of the upper central teeth, but it is only in recent literature that one can find some effort to study the custom more thoroughly. In 1923 a description was given of the limited distribution of the custom in southwest Malekula. Various accounts indicate that light blows are given with a stone to loosen the tooth, which is then forced out of its socket with a wooden implement. It is not difficult to believe the author of one nar-

rative who states that the girl has to be forcibly held by an elderly woman, who shrieks loudly to drown the cries of the victim. The most valuable account of this ceremony is a recent one (1934), for it shows the custom to be not merely an attempt to attain a curious standard of beauty, but part of an essential social rite.

In the southwest of Malekula there is an institution known as *Lapas*, which might be described as a society for females. Removal of the upper central incisors is part of the initiation ceremony. Tooth extraction, as well as cranial deformation, are traits which establish cultural demarcation between dwellers in the southwest of Malekula and those in the eastern and northwestern region of the island. One of the many problems of ethnologists is to search for the origin of such customs, and to explain why some of them are localized while others become fairly well distributed.

EXTRACTION OF WRONG TEETH SERIOUS

It is very difficult for us to conceive of a standard of beauty requiring the removal of the two upper central incisors. Primitive standards on these matters are rigid and one does not like to contemplate the fate of the operator who, presumably by mistake, removed a lateral incisor instead of a central one. One of the skulls in our collection shows that such an error was made, and we are left to speculate whether among these primitive people there was any possibility of suing the dentist for damages. That the parties who contracted a marriage were not wholly trustful of one another is shown by the fact that the teeth were not extracted until the prospective husband had paid the full bride-price.

THE AMERICAN LAND

By William R. Van Desar

"This book is recommended to all who are interested in the complete history of land in our country," says Orr Goodson, Acting Director of the Museum. "It tells of the uses of the soil since it was first broken by the earliest settlers. Here will be found the solution of 'the Indian corn mystery.' The author tells the story of how our orchards and vineyards came into being, and traces the origin of particular American fruits. Especially interesting are two chapters dealing with the abuses of the land in the past, and telling of the corrective methods now being utilized to prevent the further dissipation of the fertile top soil."

On sale at THE BOOK SHOP of the Museum. Price \$3.75. Mail and telephone (WABash 9410) orders accepted.

CAVEMAN'S STORY NEW TOPIC ON DALLWIG SUNDAY TALKS

"The Caveman Clubs His Way to Culture" is the subject for the four Sunday afternoon dramatized presentations to be given this month (December 5, 12, 19, and 26) by Paul G. Dallwig, the Layman Lecturer of Field Museum. Under this title Mr. Dallwig will trace the physical evolution of man, and outline his cultural development through the Old and New Stone Ages, with special attention to prehistoric art. He will take his audience on a visit to the Neanderthal family in their cave home, and then introduce them also to the later Cro-Magnons, the Sun-worshippers, and the Swiss Lake-dwellers. The main part of the program will be given in the Museum Lecture Hall, ending with a social hour in the Hall of the Stone Age. Mr. Dallwig's lectures all begin promptly at 2 P.M. and end at 4:30. During a half-hour intermission the audience is given opportunity for smoking and refreshments.

No Sunday lectures will be given by Mr. Dallwig during January, because of out-of-town platform engagements, but he will return in February to present "Romance of Diamonds from Mine to Man."

The size of Mr. Dallwig's audiences is necessarily limited; for this reason it is essential to make reservations in advance by mail or telephone (WABash 9410). The experience of past seasons is that long waiting lists are quickly formed for each title. There is no charge for the lectures or reservations, and admission to the Museum itself is free to everyone on Sundays.

GIFTS TO THE MUSEUM

Following is a list of some of the principal gifts received during the last month:

Department of Anthropology:

From Lieut. A. R. Cahn, U.S.N.R.—pre-historic Aleut artifacts of bone, ivory, and stone: tools, utensils, weapons, and ornaments, Aleutian Islands; from American Museum of Natural History, New York—94 sherds: black-on-white, black-on-red, and corrugated, New Mexico.

Department of Botany:

From Miss H. Elizabeth Storey, Chicago—57 herbarium specimens, Ohio; from Prof. R. L. Caylor, Cleveland, Miss.—52 specimens of algae, Mississippi; from Dr. James B. Lackey, Cincinnati, Ohio—70 specimens of algae, Wisconsin; from Ted Flanagan, Warren, Pa.—37 specimens of algae, Pennsylvania; from Harry K. Phinney, Evanston, Ill.—26 specimens of algae, Illinois.

Department of Geology:

From Kent Blakeslee, Oak Park, Ill.—a specimen of orthoceras, Illinois.

Department of Zoology:

From Chicago Zoological Society, Brookfield, Ill.—3 mammals, 3 reptiles, and a parrot; from Alfred C. Weed, Princeton, N. J.

—32 fishes, a land snail, and 4 crabs, North Carolina and Virginia; from Lt. L. J. Marchand, Camp Rucker, Ala.—9 salamanders, 4 lizards, a toad, and 7 snakes, Alabama; from G. C. Hawkins, Chicago—a horned owl, Illinois.

Library:

Valuable books from Miller Laboratories, North Bergen, N. J.; from Jorge A. Lines, San Jose, Costa Rica; from Emil Liljebld, Villa Park, Ill.; and from Dr. Wilfred H. Osgood, Henry W. Nichols, Boardman Conover, Paul C. Standley, Leon L. Pray, and Mrs. Eunice Gemmill, all of Chicago.

Raymond Foundation:

From Madame Felipe de Espil, Washington, D.C.—33 colored lantern slides and box.

BOOKS FOR CHRISTMAS AT MUSEUM SHOP

The BOOK SHOP of THE MUSEUM still features the very latest and best books in the fields of nature and science. It is an ideal place to obtain Christmas gifts for your friends whose interests or hobbies lie along these lines. Come in and browse—or give your orders by mail or telephone (WABash 9410).

Staff Notes

Mr. Karl P. Schmidt, Chief Curator of Zoology, has been appointed to the University of Chicago's Department of Zoology committee advisory to the editors of the *Encyclopedia Britannica*.

Mr. Frank C. Wonder, Assistant Taxidermist, is on leave of absence to aid the Illinois State Natural History Survey in investigations of the migrations of ducks on the Illinois River.

Museum Aids the SPARs

The Museum extended assistance to the SPARs, women's reserve of the U. S. Coast Guard, in a recruiting drive staged in connection with celebration of the first anniversary of that service November 21-27.

Marines' Photo Exhibit

During Marine Week (November 3-10), the Museum co-operated with the U. S. Marine Corps by displaying a special exhibit of official photographs made by men of that service in the Solomons, New Guinea, and other South Pacific areas.

Iridescent glass from ancient Rome forms an attractive feature of the archaeological exhibits in Edward E. and Emma B. Ayer Hall (Hall 2).

PROGRAMS OF LECTURE TOURS FOR WEEKDAYS IN DECEMBER

Conducted tours of exhibits, under the guidance of staff lecturers, are made every afternoon at 2 o'clock, except Sundays and certain holidays. The Museum will be closed on Christmas and New Year's Day.

On Mondays, Tuesdays, Thursdays, and Saturdays, general tours are given, covering all departments. Special subjects are offered on Wednesdays and Fridays:

Wednesday, December 1—Facts and Fiction About Animals (Miss Loraine Lloyd).

Friday, December 3—Islands of the South Pacific (Mrs. Roberta Cramer).

Wednesday, December 8—Indian America at the Time of Columbus (Miss Miriam Wood).

Friday, December 10—Geology and Industry (Bert Grove).

Wednesday, December 15—Christmas Gifts from Animal Products (Miss Loraine Lloyd).

Friday, December 17—Christmas Greens (Miss Miriam Wood).

Wednesday, December 22—Plant and Animal Failures (Bert Grove).

Friday, December 24—Our Neighbors to the South (Mrs. Roberta Cramer).

Wednesday, December 29—The Year's Record in Trees (Miss Miriam Wood).

Friday, December 31—Nature as an Architect (Bert Grove).

Apply at North Entrance; tours are free. By pre-arrangement groups of ten or more persons may make tours at hours and on subjects they select.

NEW MEMBERS

The following persons became Members of Field Museum during the period from October 16 to November 15:

Contributors

Joseph Adams,* Haddon H. MacLean

Associate Members

Mrs. Frederick Ives Carpenter, George D'Aquila, George Hust, Dr. Eric Oldberg, Mrs. Charles A. Palmgren, John Wentworth.

Sustaining Members

Eugene C. Fay

Annual Members

Mrs. Arthur R. Baer, Charles M. Bell, Mrs. Charles Bender, Alexander Brown, P. A. Caswell, Hamilton Coleman, Harry M. Coleman, Dr. H. J. Cornwell, Joseph Dubin, J. Frank Eaton, Mrs. Ernest H. Farrell, William H. Funke, Philip P. Gott, Mrs. E. Hartung, Clinton H. Haskell, W. B. Heald, Mrs. R. R. Holcomb, Miss Alma M. Hunnemann, C. L. Ibsen, Miss Maryellen A. Keenan, J. S. Knowlson, Mrs. Florian Mueller, Roderick Rawlins, Jr., Mrs. Peter Schuttler, David B. Straus, Maurice Turner, Irving M. Tuteur, Mrs. L. C. Zillman.

* Deceased